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A Continuing
Bibliography
with Indexes

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Management is a compilation of references to selected reports, journal articles, and other documents on the subject of management. This publication lists 919 documents originally announced in the 1981 issues of *Scientific and Technical Aerospace Reports (STAR)* or *International Aerospace Abstracts (IAA)*.

SCOPE

This publication series includes references on the management of research and development, contracts, industry, production, personnel, projects, systems, and logistics. It contains references on management of urban problems and management tools and techniques, including decisionmaking, modeling, forecasting, inventory controls, robots, and automation. It also covers safety, reliability, quality control, risks, failure analysis, warranties, guarantees, and maintenance, as well as cost effectiveness, budgeting, and other financial or economic factors of interest to managers. Management planning, policies, and philosophy, pertinent legislation, government/industry relations, and technology assessments are also included.

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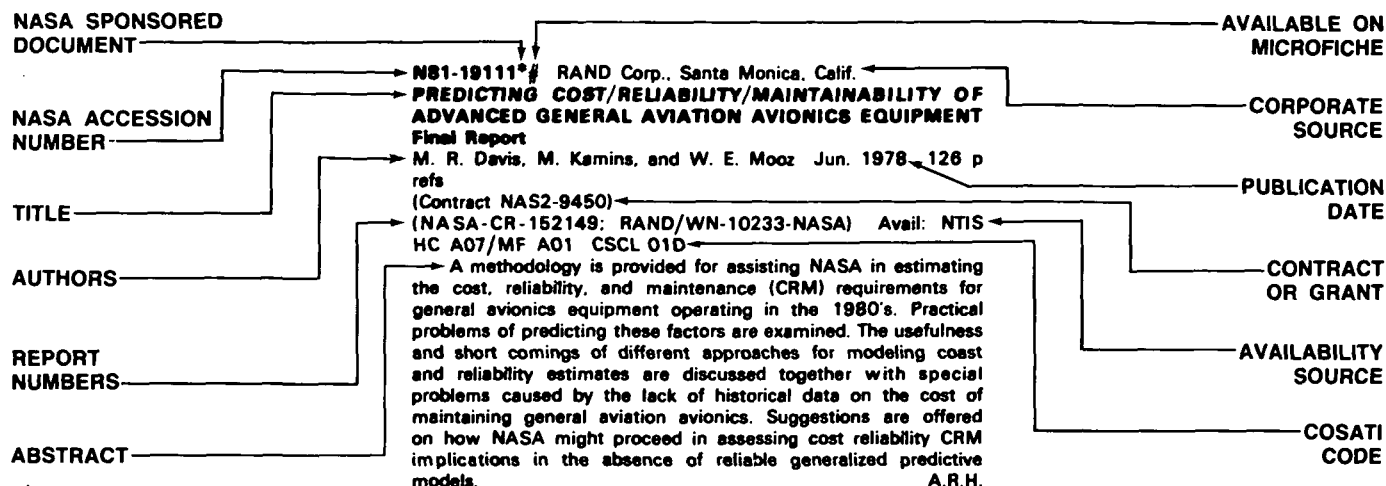
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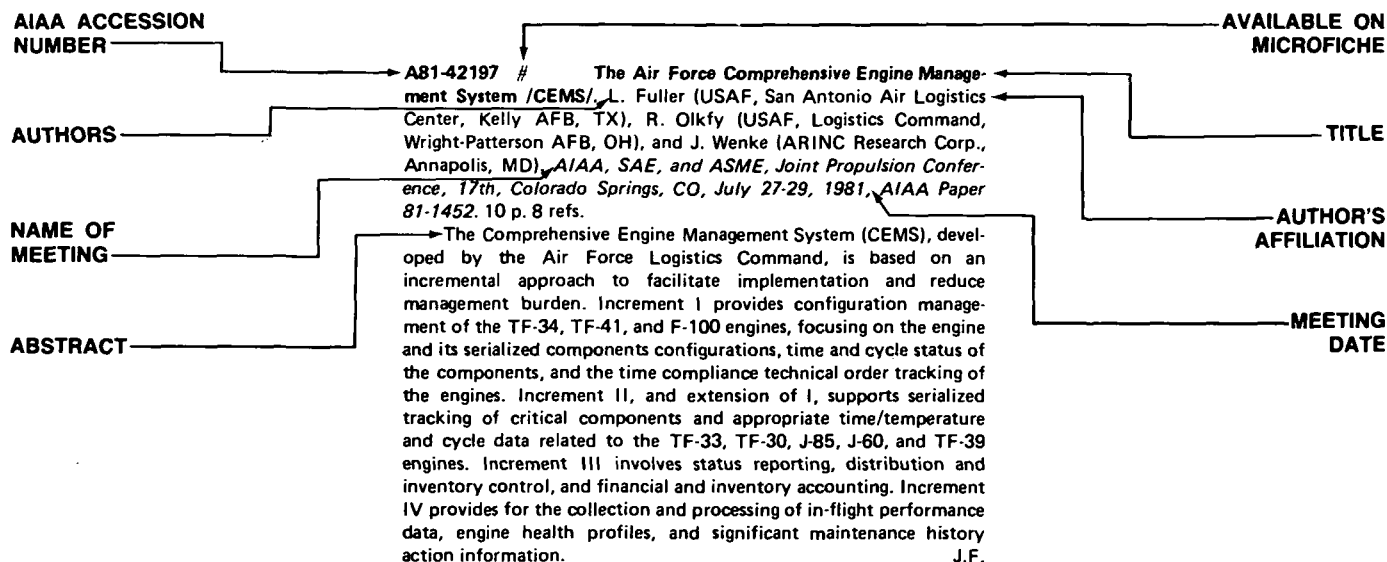
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MANAGEMENT

A Continuing Bibliography

MARCH 1982

01

RESEARCH AND INDUSTRIAL MANAGEMENT

Includes management of contracts, procurement, production, personnel, and general documents on management.

A81-11353 Training tomorrow's carrier jet pilots. B. Kovit. *Grumman Aerospace Horizons*, vol. 16, no. 3, 1980, p. 12-23.

A new integrated systems approach to training Navy jet pilots is discussed. The system, known as VTXTS, is built around the new carrier-based training airplane VTX. The intermediate and advanced training courses incorporate computerized instructional technology and methods to achieve a better flow within the program. The role of skilled instructors is considered, along with the increased use of motion and visual simulators. An automated management system integrates all aspects of the training program. R.C.

A81-12742 # Management organization in civil aviation (Organizatsiia upravleniia predpriiatiiami grazhdanskoi aviatsii). V. K. Chirkov. Moscow, Izdatel'stvo Transport, 1980. 120 p. In Russian.

The book deals with methods of modernizing and improving management of civil aviation. The proposed reorganization of civil aviation management is based on an intensification of research regarding management and control problems, improving the existing management methods, and modernizing the management procedures. V.P.

A81-14081 # The role of price-revision formulae in ESA contracts. G. Hoss (ESA, Cost Analysis Div., Noordwijk, Netherlands). *ESA Bulletin*, no. 20, Nov. 1979, p. 44-47.

The price-revision formulae in ESA contracts, which are intended to account for the impact of inflation in fixed-price contracts, are examined. Basic principles governing the establishment of price-revision formulae are considered, including the analysis of all the elements of work to be performed and the determination of official price indices. Various formulae and indices prescribed in the aerospace industry are presented, and the timing of price revisions and the continuity of formulae and indices within and between contracts is discussed. The construction of the formula is then examined, with attention given to the analysis of the evolution of labor and material costs in a firm over a long period, the calculation of the percentage shares of the individual price elements, and cases in which certain price elements are revised independently of the others. It is pointed out that the base price, price revision formulae and indices and the means for their implementation are specified in all ESA contractual agreements. A.L.W.

A81-14102 # ESA's new contract regulations - An instrument for industrial policy. W. Thoma and H. Greiffenhagen (ESA, Contracts Dept., Paris, France). *ESA Bulletin*, no. 22, May 1980, p. 70, 71.

New contract regulations have entered into force which should allow the ESA Industrial Policy Committee to play a more active role in industrial-policy matters than in the past. The main features of the new regulations that have an impact on industrial policy are the following: visibility of contract situation, approval of contracting

method, and decisions on restricted competitive and noncompetitive tenders. B.J.

A81-14103 # Why bother with basic research. H. Elliot (Imperial College of Science and Technology, London, England). *ESA Bulletin*, no. 23, Aug. 1980, p. 7-9.

The rapid growth in expenditure on basic research in the past two or three decades has raised the question whether such levels of expenditure on this type of activity can be justified in the present socio-economic context. Several arguments in support of basic research are presented. B.J.

A81-18950 The high field Jc and scaling behavior in Nb-Ti and alloyed Nb-Ti superconductors. D. G. Hawkworth and D. C. Larbalestier (Wisconsin, University, Madison, Wis.). In: Symposium on Engineering Problems of Fusion Research, 8th, San Francisco, Calif., November 13-16, 1979, Proceedings. Volume 1.

Piscataway, N.J., Institute of Electrical and Electronics Engineers, Inc., 1979, p. 249-254. 15 refs. Research supported by the U.S. Department of Energy.

Measurements of the high field, reduced temperature J(c) of four commercial NbTi and alloyed NbTi composites in the 4.2-2 K range at fields up to upper critical field H(c2) showed that their pinning curves were similar and scaled with temperature. The high accuracy scaling should be utilized by magnet designers; at high fields exceeding 0.7-0.75 H(c2), the bulk pinning force is a linear function, making J(c) easily predictable. These scaling relationships were applied to the prediction of J(c) in the Nb-Ti-Ta alloy whose H(c2) is 1.25 T higher than in the NbTi alloy; the Nb-Ti-Ta has a temperature margin of 0.75 K over the Nb-Ti composition and the predicted J(c) values of 600-800 A/sq mm are higher than those of filamentary Nb3Sn. A.T.

A81-18952 Manufacturing and quality assurance for the MFTF superconductor core. R. M. Scanlan, J. E. Johnston, P. A. Waide (California, University, Livermore, Calif.), B. A. Zeitlin, G. B. Smith, and C. T. Nelson (Intermagetics General Corp., Gunderland, N.Y.). In: Symposium on Engineering Problems of Fusion Research, 8th, San Francisco, Calif., November 13-16, 1979, Proceedings. Volume 1.

Piscataway, N.J., Institute of Electrical and Electronics Engineers, Inc., 1979, p. 260-264. 7 refs. Contract No. W-7405-eng-48.

A total of 55,000 m of multifilamentary Nb-Ti superconductor in minimum lengths of 380 m are required for the Mirror Fusion Test Facility. This conductor is a large cross-section monolith and, as such, has presented several new manufacturing challenges. In addition, a monolith requires more stringent quality assurance procedures than braids or cables. This paper describes the manufacturing steps and the quality assurance program which have been developed for the MFTF superconductor core. (Author)

A81-20400 * # Engineering management and innovation. R. W. Graham (NASA, Lewis Research Center, Cleveland, Ohio). *Mechanical Engineering*, vol. 102, Oct. 1980, p. 26-28.

Although improved management methods can enhance the performance of some enterprises, they can lower that of research organizations. The prevalent use of cost-effectiveness criteria as a management tool overvalues identifiable short-term accomplishment at the expense of long-term research efforts, which often serve as the antecedents upon which a new, seemingly unrelated technology is later founded. Medical instruments used in the treatment of

01 RESEARCH AND INDUSTRIAL MANAGEMENT

emphysema, for example, evolved from NASA-sponsored research devoted to the measurement of the composition of the atmospheres of the planets. The best manager is the manager who creates an environment that enables his research engineers to pursue ideas with a minimum of interference. Such an environment consists of broad research objectives, adequate facilities, and proper technical support. Within a framework of prudent spending, the manager's aim is to cultivate innovation. R.S.

A81-21958 Frameworks for modeling learning on the supply side of solar technology market penetration studies. J. H. Herbert. *Energy* (UK), vol. 6, Feb. 1981, p. 159-166. 14 refs.

We have previously suggested that the concept of learning is critical for determining the expected future market penetrations of solar technologies. This article presents economic frameworks suitable for analytic examinations of learning. Learning is considered within the context of economic production and supply functions for solar technology firms. Such functions are important for economic analysis of such issues as the expected future price of solar technology products and the expected future demand for capital and labor inputs by solar technology firms. (Author)

A81-24076 # Nonlinear analysis of plates and shells by the incremental procedure using a mixed model of the finite element method. H. Wada (Daido Institute of Technology, Nagoya, Japan), Y. Taki (Meijo University, Nagoya, Japan), T. Takamura (Nissan Motor Co., Ltd., Yokohama, Japan), and T. Nishimura (Nagoya University, Nagoya, Japan). *JSME, Bulletin*, vol. 23, Dec. 1980, p. 1945-1951. 8 refs.

A mixed finite element is proposed which can be applied to the geometrical nonlinear problems of thin plates and shells; the stiffness matrix is formulated by means of an incremental procedure. A plane triangular element is applied to the problems of the large deflection of square plates with initial deflection, the snap-through of shallow square caps, the large deflection of circular plates, and the compression buckling of square plates with circular hole under edge compression. The results are judged to be sufficiently accurate. B.J.

A81-24258 A quantum jump in productivity - The RAM of CADMAT. C. H. Kibble (Rockwell International Corp., Columbus, Ohio). In: *Annual Reliability and Maintainability Symposium*, Philadelphia, Pa., January 27-29, 1981, Proceedings. New York, Institute of Electrical and Electronics Engineers, Inc., 1981, p. 59-62.

The Computer Aided Design Manufacturing and Test (CADMAT) program will aid production, testing, and inspection using design data base with a minimum of human effort and virtually without drawings or paperwork. The CADMAT program proposes elimination of reliability and maintenance (RAM) drawings, manufacturing planning documents, quality and inspection planning tickets, and failure feedback forms. The paper specifies the CADMAT and RAM areas requiring attention, and presents recommendations for 'paperless' design, manufacturing, and test systems. A.T.

A81-26697 A systems approach to the management of research and development. R. E. Gibson. *Johns Hopkins APL Technical Digest*, vol. 1, Oct.-Dec. 1980, p. 252-263. 9 refs.

The dynamics of communication between people in a research and development system are analyzed. A categorization of six different mental types, suited for different types of work, is given. A schematic analysis of system communication is presented, with the aim of improving the consensus of cooperating elements within a system. Some misunderstandings of objectives, leading to time wasters such as faulty communication and indecision, are analyzed on the basis of a hypothetical flow of thought in response to communication. D.K.

A81-30341 Producibility engineering at ASD. S. P. Mediratta and J. F. Dreher (USAF, Aeronautical Systems Div., Wright-Patterson AFB, Ohio). In: *NAECON 1980; Proceedings of the National Aerospace and Electronics Conference*, Dayton, Ohio, May 20-22, 1980. Volume 3. New York, Institute of Electrical and Electronics Engineers, Inc., 1980, p. 1116-1123.

Producibility engineering is receiving increased attention at ASD. Producibility engineers, acting as interface between design and manufacturing engineers, aspire to achieve optimum in design for producibility considerations. To maximize the benefits from producibility tradeoffs, ASD emphasizes that the efforts of design and manufacturing engineers must be integrated early in the system acquisition phase. This is accomplished by imposing various producibility requirements in contracts. Requirements vary depending upon the type and phase of the program. Several sample producibility requirements are presented, followed by recent examples of savings realized through an organized producibility effort. (Author)

A81-36862 Management of optics; Proceedings of the Seminar, Huntsville, Ala., October 1, 2, 1980. Seminar sponsored by the Society of Photo-Optical Instrumentation Engineers. Edited by R. L. Hartman (U.S. Army, Missile Command, Redstone Arsenal, Ala.). Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers (SPIE Proceedings. Volume 260), 1981. 134 p. \$39.

Topics discussed include the defining of optics research contracts, the management of high performance optical systems, Space Telescope, and the Einstein (HEAO-B) observatory. Particular attention is given to the recognition and avoidance of project failure by good management organization and control. Also considered are projections of electro-optic trend correlations and management of optics independent research and development programs. Other issues given special attention include the scientific and system engineering management of Space Telescope and the role of management control in HEAO-B mirror development. J.F.

A81-36863 Optics research contract decisions. B. D. Guenther and R. Lontz (U.S. Army, Research Office, Research Triangle Park, N.C.). In: *Management of optics; Proceedings of the Seminar, Huntsville, Ala., October 1, 2, 1980*. Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers, 1981, p. 11-17.

The environment of power in which the optics research manager works has a significant influence on the formulation of decisions regarding individual proposals for research. Decisions concerning the distribution of funds for optics research are dependent upon the organization of RDT&E personnel within the Department of Defense and the Military Services. Decision making is not dependent upon a pyramid structure in which the optics manager responds only to his immediate supervisor, but to a wheel of power centers. The wheel model, developed by Fenn (1979), illustrates the internal power centers (DARCOM headquarters, ARO Physics Director, DoD Director of Research, Department of Army, Advisory Group of Electron Devices) and external centers (peer reviewers, professional groups) which influence the activities of an ARO optics manager. There is as yet no formal mechanism within the Defense community for stimulating the transfer of research to the final product, and the technical community is advised to develop more global interests than their current research laboratory activities. J.F.

A81-36864 Management in a government laboratory - A case study. R. L. Hartman (U.S. Army, Missile Command, Redstone Arsenal, Ala.). In: *Management of optics; Proceedings of the Seminar, Huntsville, Ala., October 1, 2, 1980*. Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers, 1981, p. 18-23.

Managers need to establish thresholds at which corrective action is taken, rather than moving with small steps to failure. A case study (synthesized from a number of actual incidents) of a research project in a government laboratory is presented, following a protagonist through the inception, selling, and performance of a new field of research. After numerous reorganization efforts, which only increase the number of participants involved, the program edges forward, years behind its proposed deadline. A model is offered of critical functions needed to be performed by a government laboratory, including the solving of technical problems, the generation of new ideas, the gathering of technical as well as marketing/manufacturing information, the selling of the project, and the management and the coaching of the project. A simple graph illustrates the direction of potential trouble by which a manager can more readily recognize problems developing in a project. J.F.

A81-36868 The management role in optical programs. E. J. Galat (Itek Corp., Optical Systems Div., Lexington, Mass.). In: Management of optics; Proceedings of the Seminar, Huntsville, Ala., October 1, 2, 1980. Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers, 1981, p. 53-60.

The management team in today's high-technology optical field must be flexible, maintaining a balance between the definition and resolution of critical technological problems, the development of conceptual designs for operational and support hardware, and the actual production of this hardware. The role of management in the evolution of three high-technology optical programs is discussed, illustrating its involvement with scientists, sales and systems engineers, and design engineers. The first case study examines the DARPA High Altitude Large Optics (HALO) program, established to solve problems for the envisioned HALO optical system. Management of the proposal, the program and future business, along with recruitment of the project technical team are the manager's first responsibilities. Besides creating an atmosphere conducive to invention, he must assess future implications of the program and recommend solutions to his customers. The second example involves the system definition phases of the Space Telescope Program. The program development manager must consider all resource commitments in the acquisition phase and display good negotiating prowess and salesmanship. The actual production of operational hardware requires firm specifications and well-defined system interfaces. At this stage in the development, management must show greater resistance to design changes in order to product its hardware in a timely, cost-effective manner. J.F.

A81-36870 Management of optics independent research and development programs. R. J. Wollensak (Itek Corp., Optical Systems Div., Lexington, Mass.). In: Management of optics; Proceedings of the Seminar, Huntsville, Ala., October 1, 2, 1980. Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers, 1981, p. 70-75.

Managers of optics IR&D must strike a balance between improving basic technical skills and developing new or improved techniques to meet the future needs of customers. The IR&D organization within one industrial concern is discussed, and the ways in which IR&D management identifies a future hardware requirement and subsequently plans, staffs, and executes improvements through a series of continuing programs are explored. An annual IR&D program is formulated, and all activities are documented and collated into a final report. Once initiated, the program is reviewed periodically to ensure that technical, cost, and schedule goals are being met. The concern's development of a new ultralightweight mirror technology is used as an IR&D program example. J.F.

A81-36875 The scientist's role in the management of large X-ray optics. L. P. Van Speybroeck (Harvard-Smithsonian Center for Astrophysics, Cambridge, Mass.). In: Management of optics; Proceedings of the Seminar, Huntsville, Ala., October 1, 2, 1980. Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers, 1981, p. 110-113.

HEAO-B, the first astrophysical observatory in the X-ray wavelength range, consists of a mirror, a group of focal plane instruments, and a supporting spacecraft structure. The mirror, the most challenging task of the program, was a joint effort by SAO, AS&E, Perkin-Elmer, and NASA. In developing the HEAO-B, the direct cost of optics was minimal, and attempts were made to avoid major expenditures due to poor planning, inadequate instrumentation and delayed starts. Experienced variations in X-ray mirror quality were found to have great technical impact, and uncertainties in the relationship between surface properties and final performance led to a variation in the purchasing practice, involving several of the design parties at once. Management kept NASA informed of the project status, and reported progress to the principal investigator and the scientific community. The observatory has had success due to the emphasis placed on problems of surfaces, properties of materials, and measurement techniques. J.F.

A81-40466 # Partners in risk - Cost incentives in development contracts. S. G. Kahn (ESA, European Space Research and Technology Centre, Noordwijk, Netherlands). *ESA Bulletin*, no. 26, May 1981, p. 48-53.

A contractual procedure used by the European Space Agency to limit cost overruns in its research and development programs is outlined. A cost-sharing scheme is applied to cost-reimbursement contracts. Savings over a cost target agreed upon prior to a project are apportioned between the two parties according to a previously established ratio. In the case of overruns, the contractor does not earn profits on excess costs, and only a portion of these are reimbursed. Simplified cost and price structures for three different types of contracts (a fixed-price contract and two cost-reimbursement contracts with different degrees of risk) are given, and their commercial consequences are discussed. C.K.D.

A81-40898 # A strategy for developing the next generation fighter/attack aircraft engine. D. A. Gissendanner (U.S. Department of Defense, Washington, DC). *AIAA, SAE, and ASME, Joint Propulsion Conference, 17th, Colorado Springs, CO, July 27-29, 1981, AIAA Paper 81-1478*, 7 p.

The paper discusses the process of forming a cohesive team involving the DOD, the Armed Services and the propulsion and airframe contractors to improve the development process of the next generation tactical fighter/attack aircraft engine. Among suggestions to improve the current programs are: starting the engine development schedule before the aircraft schedule, adequately specifying fundamental mission/system/engine requirements, basing engine designs on verified technology, clearly defining engine maintenance and support concepts, and accurately assessing program costs. Emphasized are competitive hardware demonstrations, extensive component/engine verification and validation, and a joint Service management concept. Learning from past difficulties will be a key element in initiating a late 1980's full scale engineering development program. D.L.G.

A81-41794 Aircraft industry dynamics - An analysis of competition, capital, and labor. B. Bluestone, P. Jordan, and M. Sullivan (Boston College, Chestnut Hill, MA). Research sponsored by the U.S. Department of Commerce, U.S. Department of Labor, and U.S. Public Health Service; Contract No. DOC-OER-620-678-14. Boston, MA, Auburn House Publishing Co., 1981. 222 p. 353 refs. \$20.

A social, political and economic assessment is given for the U.S. aircraft industry, covering both airframe and engine manufacturers and commercial and military production. Covered are: (1) the marketing, geographical location and production strategies of the industry; (2) the history of the industry's development to 1950, with emphasis on its expansion during World War II; (3) the transformation of the industry during the development of large commercial markets and the military missile market; (4) sales concentrations and competitive trends; (5) capital investment, plant location, and technology development, including the subcontractor network; (6) the aircraft industry labor market; (7) relations with government, both as customer and regulator; and (8) future prospects for the industry. O.C.

A81-42699 A methodology for the evaluation of research and development projects and associated resource allocation. C. Miller (Colorado, University, Boulder, CO) and A. P. Sage (Virginia, University, Charlottesville, VA). *Computers and Electrical Engineering*, vol. 8, June 1981, p. 123-152. 38 refs.

This paper develops a methodology for the evaluation of research and development projects and the allocation of resources for the development of large scale technologies. The methodology is directed at the problem of selecting a research portfolio when the number of projects is large enough that enumeration of all the possibilities is impractical. In a series of successive screening stages, the number of candidate portfolios is reduced to a practical number. The initial screening stage is based on projected performance of the technology. Successive stages first screen market penetration by ignoring competition from other projects in the portfolio, and then screen by considering project competition. Thus succeeding stages in the methodology are successively finer but more costly to implement. Project screening techniques, which include elimination by aspects, ranking, and stochastic dominance are applied throughout the methodology to result in a heuristic and effective approach to evaluation, and associated resource allocation, in very large scale systems. (Author)

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A81-43270 # Diagnostic specification - A proposed approach. W. H. Carroll (USAF, Directorate of Nuclear Survey, Kirtland AFB, NM), V. L. Linden, and C. R. Waldo (USAF, Air Force Test and Evaluation Center, Kirtland AFB, NM). *IEEE Transactions on Reliability*, vol. R-30, Aug. 1981, p. 227-231.

Automatic diagnostics do not always meet user requirements due to poorly written specifications. Diagnostic requirements must be related to the user's operational maintenance concept, and an integrated approach must be employed that ties the development of the diagnostics to the operational and logistics support elements of the system. Both the user and the acquisition agency must fully understand the developer's fault-detection/fault isolation (FD/FI) design theory and employ a standardized diagnostic terminology in addressing the proposed system. Since there will always be maintenance faults beyond an automatic FD/FI system's capability, clear and complete procedures for dealing with such situations must be provided. Finally, the specifications of requirements for a diagnostic system should be clearly defined in terms of performance capabilities, time limitations, and constraints. J.F.

A81-47419 To the question of formation and economic effectiveness estimation of management-engineering systems when developing the space vehicles. V. N. Novikov and D. N. Sheverov (Akademiia Nauk SSSR, Moscow, USSR). *International Astronautical Federation, International Astronautical Congress, 32nd, Rome, Italy, Sept. 6-12, 1981, Paper 81-229*. 17 p. 5 refs.

Various management-engineering systems (MES) which participate in conducting research and development on space vehicles and systems are discussed. The systems permit the transfer of system-design principles and control from one system to another, due to their generality of structure, relationships, and principles of control. General and specific principles of MES design are formulated, and the algorithmic structure of automated design of space systems is obtained. Problems of the selection of criteria for economic effectiveness are considered, and uncertainties created in the optimization of a reusable space system at different stages of design development are given and analyzed. Flow charts are also given to illustrate spacecraft development, an automated MES, algorithm forecasting of economic ideas and dynamic parameters, and functional interlevel relations between modules and assembling. A method of conducting studies at different stages of research and development is proposed, which takes into account uncertainties, and increases the quality and effectiveness of the design. D.L.G.

N81-11220# Swedlow, Inc., Garden Grove, Calif.
DETERMINE THE FEASIBILITY OF FABRICATING POLY-PROPYLENE SPHERICAL ARMOR RADOMES FOR PROTECTION FROM A LEVEL 2 FRAGMENTATION THREAT
Final Report
G. Cook 30 Aug. 1980 34 p refs
(Contract N00173-79-C-0266)
(AD-A089740; SI-ER-915-FR) Avail: NTIS HC A03/MF A01 CSDL 17/9

This program has as its objective the determination of the feasibility of fabricating polypropylene armor radomes. These radomes are required to provide protection for radar antennas from a Level II fragmentation threat. Four inch thick PP armor will be required to meet this threat level. The plan was to develop processes based on the present state-of-the-art technology to fabricate four inch thick spherical radome sections, and to investigate edge-to-edge joining of flat polypropylene armor panels. The thick spherical molding is beyond the present technology and will require a new tooling and production approach. The present technology is limited to one inch thick flat panels. The manufacture of several four inch thick radome shell sections with a 60 inch spherical radius established the feasibility of this approach. These panels were submitted to the Naval Research Laboratory for performance evaluation. Adhesive and fusion bonded edge-to-edge joining methods were also developed. The systems evaluated indicate the feasibility of obtaining structural joints of PP armor panels. GRA

N81-11900# California Univ., Berkeley. Operations Research Center.
PRODUCTION PLANNING FOR MULTI-RESOURCE NETWORK SYSTEMS
Robert C. Leachman Aug. 1980 16 p refs Submitted for

publication
(Contract N00014-76-C-0134)
(AD-A089989; ORC-80-18) Avail: NTIS HC A02/MF A01 CSDL 12/2

Production planning for large-scale production systems requiring the allocation of numerous resources is considered. It is demonstrated how the dynamic activity analysis developed by Shephard leads to linear programming solutions of production planning problems. Three types of planning problems are formulated: maximization of output levels for a given time horizon; minimization of production duration for given output histories; and minimization of production costs for given output histories. GRA

N81-11901# California Univ., Berkeley. Operations Research Center.

MULTIPLE RESOURCE LEVELING IN CONSTRUCTION SYSTEMS THROUGH VARIATION OF ACTIVITY INTENSITIES Research Report

Robert C. Leachman Aug. 1980 19 p refs Submitted for publication
(Contract N00014-76-C-0134)
(AD-A089988; ORC-80-17) Avail: NTIS HC A02/MF A01 CSDL 05/1

The resource leveling problem for a construction system producing a stream of output units is considered. The system is modeled using a critical-path-analysis activity network from which an extended network is developed for an integrated planning effort of all output units. Activity intensity variables are defined which measure activity demand rates for resources and consequent activity durations for the production of each output unit. A heuristic approach consisting of an iterative non-linear programming procedure is presented which computes activity durations (intensities) for the minimization of resource capacity costs subject to meeting construction due dates. The application of a major ship overhaul is described in which the procedure was used to level workloads of the various labor-trade shops. GRA

N81-11977*# Alabama Univ. in Huntsville.
RESEARCH REPORTS: THE 1980 NASA/ASEE SUMMER FACULTY FELLOWSHIP PROGRAM Report, 26 May - 1 Aug. 1980

B. F. Barfield, ed., Marion I. Kent, ed. (NASA. Marshall Space Flight Center), James Dozier, ed. (NASA. Marshall Space Flight Center), and Gerald Karr, ed. Oct. 1980 722 p refs Fellowship program held at NASA. Marshall Space Flight Center, 26 May - 1 Aug. 1980 Prepared in cooperation with Alabama Univ., University

(Grant NGT-01-022-099)
(NASA-CR-161511) Avail: NTIS HC A99/MF A01 CSDL 05A

The Summer Faculty Fellowship Research Program objectives are: to further the professional knowledge of qualified engineering and science faculty members; to stimulate an exchange of ideas between participants and NASA; to enrich and refresh the research and teaching activities of participants and institutions; and to contribute to the research objectives at the NASA centers. The Faculty Fellows engaged in research projects commensurate with their interests and background and worked in collaboration with a NASA/MSFC colleague.

N81-11979*# Alabama Univ. in Huntsville.
MSFC PERSONNEL MANAGEMENT TASKS: RECRUITMENT AND ORIENTATION OF NEW EMPLOYEES
Thomas A. Brindley In its Res. Rept.: The 1980 NASA/ASEE Summer Fac. Fellowship Program Oct. 1980 20 p

Avail: NTIS HC A99/MF A01 CSDL 05A

In order to encourage highly motivated young students to learn about NASA and consider it for a career, a formal program is to be initiated whereby selected students can work on a voluntary basis at Marshall Space Flight Center (MSFC). The first task was to develop the working plan and procedures for this program, called Student Volunteer Service Program, in the writing of MSFC official guidelines, the Marshall Management Instruction (the MMI) which is a binding document that defines policy and establishes procedures and guidelines. Particular considerations written into the MMI after numerous consultations, interviews, and discussions about a satisfactory policy, include: arrangements to be made between the student, the school

authorities, and concerned MSFC employees; management of the work assignments; and procedures for the student's welfare and safety. The second task was the development of a recruitment brochure for the attraction of new employees, especially scientists and engineers. The third task assigned was to develop a plan called Orientation of New Employees. E.D.K.

N81-13118# Sandia Labs., Livermore, Calif.
FUNDAMENTAL COMBUSTION AND DIAGNOSTICS RESEARCH AT SANDIA Progress Report, Jan. - Mar. 1980

D. L. Hartley and M. A. Gusinow, ed. Jun. 1980 39 p refs
Sponsored by DOE

(SAND-80-8223) Avail: NTIS HC A03/MF A01

The overall research program addresses: detailed chemistry of combustion, fundamental processes associated with laminar and turbulent flames development of research techniques specifically applicable to combustion environments, and operation of the user oriented Combustion Research Facility. Reports on the research sponsored by the Office of Basic Energy Sciences are presented. Activities in Combustion Research, Molecular Physics and Spectroscopy, and Diagnostics Research are described. Author

N81-13507# Engineering Societies Commission on Energy, Inc., Washington, D. C.

RESEARCH PROGRAMS RELEVANT TO FOSSIL-ENERGY TECHNOLOGY Final Report

L. D. Conta Aug. 1980 61 p

(Contracts DE-AC01-77ET-10679; EF-77-C-01-2468)

(FE-2468-81) Avail: NTIS HC A04/MF A01

An overview of energy R, D, and D programs in government agencies, industry, and the professional societies as they appear to be of particular importance to the development of fossil-energy technologies is presented. The diversity of programs and sponsoring organizations involved are discussed and the interrelationship of the research activities is pointed out. A framework is provided upon which the potential for additional technology transfer and cooperative efforts can be examined. DOE

N81-14915*# National Aeronautics and Space Administration, Washington, D. C.

STANDARD SPACECRAFT PROCUREMENT ANALYSIS: A CASE STUDY IN NASA-DOD COORDINATION IN SPACE PROGRAMS Ph.D. Thesis - Rand Graduate Inst.

Elwyn D. Harris May 1980 224 p refs Prepared in cooperation with Rand Corp., Santa Monica, Calif.

(R-2619-RC; LC-80-18874; ISBN-0-8330-0248-1) Avail: NTIS HC A10/MF A01 CSCL 05A

The Space Test Program Standard Satellite (STPSS), a design proposed by the Air Force, and two NASA candidates, the Applications Explorer Mission spacecraft (AEM) and the Multimission Modular Spacecraft (MMS), were considered during the first phase. During the second phase, a fourth candidate was introduced, a larger, more capable AEM (L-AEM), configured by the Boeing Company under NASA sponsorship to meet the specifications jointly agreed upon by NASA and the Air Force. Total program costs for a variety of procurement options, each of which is capable of performing all of the Air Force Space Test Program missions during the 1980-1990 time period, were used as the principal measure for distinguishing among procurement options. Program cost does not provide a basis for choosing among the AEM, STPSS, and MMS spacecraft, given their present designs. The availability of the L-AEM spacecraft, or some very similar design, would provide a basis for minimizing the cost of the Air Force Space Test Program. Author

N81-14916# Carnegie-Mellon Univ., Pittsburgh, Pa. Management Science Research Group.

THE SOLUTION OF MANPOWER PLANNING PROBLEMS BY THE FORWARD SIMPLEX METHOD

Jay E. Aronson (Southern Methodist Univ., Dallas) and Gerald L. Thompson Aug. 1980 20 p refs

(Contract N00014-75-C-0621)

(AD-A091521; MSRR-463; WP-3-80-81) Avail: NTIS HC A02/MF A01 CSCL 12/1

The use of the forward simplex algorithm of Aronson, Morton, and Thompson to solve the multi-stage personnel planning linear programming models of Charnes, Cooper, and Niehaus is

described. Computational Results on randomly generated problems having up to 200 periods indicate that the forward simplex method requires CPU time and number of pivots which are linear in the number of periods. The standard simplex method requirements vary with at least the cube of the number of periods. For this reason the forward simplex method should be especially useful for solving real time, conversational versions of personnel (and other) planning models. GRA

N81-14917# Department of Energy, Washington, D. C. Office of the Controller.

COST AND SCHEDULE CONTROL SYSTEMS CRITERIA FOR CONTRACT PERFORMANCE MEASUREMENT: IMPLEMENTATION GUIDE

May 1980 109 p

(DOE/CR-0015) Avail: NTIS HC A06/MF A01

The DOE Cost and Schedule Control System System Criteria for Contract Performance Measurement provides DOE and its contractors uniform guidance for CSCSC implementation in compliance with DOE Order 2250.1. Implementation refers to the application of the CSCSC to specific contracts, the assessment of contractor's management systems for compliance with the requirement, and subsequent DOE systems validation or acceptance verifying the contractor's compliance. Any supplemental instructions by individual DOE organizations is consistent with the DOE Order and with this and other CSCSC guidance documents. S.F.

N81-16890*# National Aeronautics and Space Administration, Washington, D. C.

THE PLANNING AND CONTROL OF NASA PROGRAMS AND RESOURCES

Jan. 1981 54 p refs

(NASA-TM-83090) Avail: NTIS HC A04/MF A01 CSCL 05A

The major management systems to form the agency's general management approach in carrying out its mission are described. Lists of documents containing more detailed descriptions of the processes and techniques involved in the agency's major management systems are presented. T.M.

N81-16576*# Solar Power Corp., Woburn, Mass.

DESIGN, FABRICATION, TEST, QUALIFICATION AND PRICE ANALYSIS FOR THIRD GENERATION DESIGN SOLAR CELL MODULES Final Report

15 Sep. 1980 99 p refs Sponsored in part by NASA and DOE Prepared for JPL

(Contract JPL-955403)

(NASA-CR-163917; DOE/JPL-955403-80/1; JPL-9950-464)

Avail: NTIS HC A05/MF A01 CSCL 10A

An updated program plan is presented showing the task descriptions depicting the work, progress, achievements, and the cause of any deviations from the original plan (SC-1), and how this impacted on the original schedule of the program. In addition there is an update documenting all design alterations made during the pre-production phase and a complete up to date set of engineering and manufacturing documentation (CM-1). The purpose of the work in the original plan was to explore, design, develop, test, and deliver 1000 watts of prototype flat plate, photovoltaic modules appropriate for use in applications in the 20 to 500 kilowatt range and which show potential for meeting the 1986 cost goals. E.D.K.

N81-16957# New York Univ., N. Y. Center for Science and Technology Policy.

FLOW OF TECHNOLOGY FROM THE OECD TO THE USSR: A FEASIBILITY STUDY

Herbert I. Fushfeld Jan. 1980 38 p refs

(AD-A092442; FAR-30000) Avail: NTIS HC A03/MF A01 CSCL 05/2

This report (1) evaluates the feasibility for conducting a study of the relative value to the U.S.S.R. of technology obtained by direct exchanges with the U.S., and (2) discusses the availability, accessibility, and probable contribution of published and unpublished sources of information and data necessary to carrying out the project. Our conclusion is that the basic objective is indeed feasible, and the originally proposed program of value, for these reasons: (1) adequate information is, or will be made, available; (2) the specific analysis recommended has not been previously performed; (3) current research programs at other

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institutions are not addressing these specific questions; and (4) the results will provide a valuable basis for broader discussions and analyses. GRA

N81-17169# Department of Energy, Washington, D. C. Div. of Materials Sciences.

MATERIALS SCIENCES PROGRAMS. FISCAL YEAR 1980. OFFICE OF BASIC ENERGY SCIENCES

Sep. 1980 173 p
(DOE/ER-0064) Avail: NTIS HC A08/MF A01

This report provides a convenient compilation index of the DOE Materials Sciences Division programs. This compilation is intended for use by administrators, managers, and scientists to help coordinate research and as an aid in selecting new programs and is divided into Sections A and B, listing all the projects, Section C, a summary of funding levels, and Section D, an index (the investigator index is in two parts, laboratory and contract research). DOE

N81-17954# California Univ., Berkeley. Operations Research Center.

A FUNCTIONAL INEQUALITY, WITH APPLICATIONS TO PRODUCTION THEORY

King-Tim Mak Oct. 1980 18 p refs
(Contract N00015-76-C-0134; Grant NSF MCS-77-16054)
(AD-A093785; ORC-80-22) Avail: NTIS HC A02/MF A01 CSCI 05/3

A functional inequality is used in the formulation of a regularity condition on the scaling of production. This functional inequality is characterized and then applied: deduce a law of diminishing return; and derive a bound on the growth of an open economy. GRA

N81-17958# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, Ala.

THE MARSHALL CENTER: ITS PLACE IN NASA
[1981] 31 p refs

(NASA-TM-82254) Avail: NTIS HC A03/MF A01 CSCI 05A

The organizational structure and facilities available at the Marshall Space Flight Center are described and the role of the Center in NASA program management is demonstrated in a review of the Center's past history and current development projects. Particular attention is given to space shuttle and the space transportation system; the preparation of experiments and management of Spacelab missions; and the development of the space telescope. Energy related activities discussed include the automatic guidance and control of the longwall shearing machine for coal extraction, systems for the solar heating and cooling of buildings, and the design of the solar power satellite. Products developed by Center personnel highlighted include the power factor controller to reduce electrical consumption by motors and the image enhancement process being used to restore early historical photographs. A free flying solar power source to increase mission duration of the orbiter and its payloads; techniques for the orbital assembly of large space structures; facilities for materials processing in space; the orbit transfer vehicle, solar electric propulsion systems; and the preparation of science and applications payloads are also described. A.R.H.

N81-18050# Information Spectrum, Inc., Warminster, Pa.
COMPILATION OF ENERGY EFFICIENT CONCEPTS IN ADVANCED AIRCRAFT DESIGN AND OPERATIONS. VOLUME 2: ABSTRACT DATA BASE Final Report, 10 Mar. - 5 Nov. 1980

Milton Clyman, Sheldon J. Einhorn, and Richard S. Schultz 5 Nov. 1980 435 p refs
(Contract N62269-80-C-0200)
(AD-A094226; NADC-79239-60-Vol-2) Avail: NTIS HC A19/MF A01 CSCI 01/3

The technologies necessary to support next generation (1990+) air vehicle design and operation concepts that will reduce the requirements for natural petroleum derived energy are considered in the Advanced Concepts Data Base which consists of 599 abstracts listed as 948 entries. The data base abstracts are arranged into 11 areas of R&D effort as follows: synthetic fuels, liquid hydrogen fuels, other fuels; gas turbines, nuclear propulsion, advanced propulsion; aerodynamics; structures and materials; flight performance management; advanced and unconventional systems; and energy efficient operation. A.R.H.

N81-18061# Information Spectrum, Inc., Warminster, Pa.
COMPILATION OF ENERGY EFFICIENT CONCEPTS IN ADVANCED AIRCRAFT DESIGN AND OPERATIONS. VOLUME 1: TECHNICAL REPORT Final Report, 10 Mar. - 5 Nov. 1980

Milton Clyman, Sheldon J. Einhorn, and Richard S. Schultz 5 Nov. 1980 101 p refs
(Contract N62269-80-C-0200)
(AD-A094225; NADC-79239-60-Vol-1) Avail: NTIS HC A08/MF A01 CSCI 01/3

This final report (contained in two volumes) presents the results of research into published literature. The search addressed the technologies necessary to support next generation (1990+) vehicle design and operation concepts that will reduce the requirement for natural petroleum-derived energy. The Advanced Concepts Evaluation (ACE) Data Base consists of 599 unique abstracts listed as 948 entries. The ACE Data Base is arranged into eleven areas of R D effort, each subdivided into Navy and non-Navy funded programs. Volume 1 includes introduction, Data Bases searched, research methodology for creation of the ACE Data Base, summary of search results, conclusions and recommendations. This volume contains an appendix of search strategies utilized. GRA

N81-18916# National Aeronautics and Space Administration, Washington, D. C.

THE FUSION OF MBB WITH VFW FINALLY BROUGHT TO COMPLETION

Feb. 1981 10 p Transl. into ENGLISH from Sueddeut. Zeitung (West Germany), no. 293, 1980 p 21 Transl. by Scientific Translation Service, Santa Barbara, Calif.

(Contract NASw-3198)
(NASA-TM-76489) Avail: NTIS HC A02/MF A01 CSCI 05A

Two newspaper type articles describing the final, long awaited unification of the two German Air and Space companies, MBB and VFW are presented. Government participation in this 'fusion' arrangement and the advantages expected to accrue are discussed. T.M.

N81-18944# National Aeronautics and Space Administration, Washington, D. C. Office of External Relations.

THE IMPACT OF NASA RESEARCH AND DEVELOPMENT EXPENDITURES ON TECHNOLOGICAL INNOVATION AND THE ECONOMY

Henry R. Hertzfeld / In ESA Econ. Effects of Space and Other Adv. Technol. Sep. 1980 p 81-94 refs

Avail: NTIS HC A12/MF A01 CSCI 05A

Various measures of the economic impact of NASA on the U.S. economy are examined. Macroeconomic analyses, microeconomic analyses, and actual data from NASA program offices are analyzed for their strengths, weaknesses, and results. Each of the measures presented reveals very positive impacts of NASA research and development on the productive capacity of the economy. Data are also presented which document the relative short time span between research and development funding and the realization of economic benefits. A plan for future NASA studies in further documentation and verification of these effects is outlined. Author (ESA)

N81-18947# State Dept., Washington, D. C.
ECONOMIC POTENTIAL OF RESEARCH AND DEVELOPMENT IN SATELLITE COMMUNICATIONS

S. Ahmed Meer / In ESA Econ. Effects of Space and Other Adv. Technol. Sep. 1980 p 117-127 refs

Avail: NTIS HC A12/MF A01

The impact of U.S. civilian satellite communications research programs is reviewed and the potential for private sector investment for future research and development assessed. Systems analysis and market studies on future fixed satellite communications at 20 to 30 GHz and land mobile satellite communication at 800 MHz are presented. The large economic potential forecast by these studies combined with the historic perspective argues for continuation of a federal role in research and development in satellite communications. Author (ESA)

N81-18959# B and W Elektronik A.S., Aarhus (Denmark).
FROM SPACE METHODOLOGY TO CONSUMER PRO-

DUCTS

K. Stockholm / In ESA Econ. Effects of Space and Other Adv. Technol. Sep. 1980 p 227-231 refs

Avail: NTIS HC A12/MF A01

Spin-off from development and production of electronic equipment under ESA contracts is considered. Some of these methods, particularly quality control, safety analysis and process control, were found to be useful tools in other branches of development and production programs. It is noted how the experience from the methods learned via ESA programs is communicated to other companies in Scandinavia by lectures, papers at conferences, and participation in working groups. Examples cited include a process for coating aluminum parts, a plating through process for circuit boards, and a production problem in an audio system. Author (ESA)

N81-18999# Office of the Deputy Secretary of Defense, Washington, D. C.

REQUIRED IN-HOUSE CAPABILITIES FOR DEPARTMENT OF DEFENSE RESEARCH, DEVELOPMENT, TEST AND EVALUATION

1 Oct. 1980 26 p refs

(AD-A094024) Avail: NTIS HC A03/MF A01 CSCL 05/1

This report describes the required in-house RDT and E capabilities of the Department of Defense (DOD) RDT and E organizations. It discusses the role of Government R and D, the R and D process and environment, DOD responsibilities, and finally the required in-house capabilities. This document discusses the responsibilities of the DOD internal research, development, test and evaluation establishment, which comprises program management offices, laboratories, research and development centers, test and evaluation activities, and other technical organizations. Collectively, these internal RDT and E organizations represent a vital component of the Defense research, development, and acquisition program. GRA

N81-19732# National Oceanic and Atmospheric Administration, Princeton, N. J. Geophysical Fluid Dynamics Lab.

GEOPHYSICAL FLUID DYNAMICS LABORATORY (GFDL) ACTIVITIES-FY80, PLANS-FY81 WITH A REVIEW OF TWENTY-FIVE YEARS OF RESEARCH 1955-1980 Annual Report

1980 154 p refs

(PB81-132441; NOAA-80102401)

HC A08/MF A01 CSCL 04B

The work accomplished at the Geophysical Fluid Dynamics Laboratory is summarized and a glimpse of the near future direction of its research plans is presented. A survey of twenty-five years of research at GFDL is included. GRA

N81-19959# National Aeronautics and Space Administration, Washington, D. C.

RESEARCH AND TECHNOLOGY OBJECTIVES AND PLANS SUMMARY FY81

1981 158 p

(NASA-TM-82189) Avail: NTIS HC A08/MF A01 CSCL 05A

A compilation of the summary portions of each of the Research and Technology Operating Plans (RTOP) used for management review and control of research currently in progress throughout NASA is presented. Indexes include: subject, technical monitor, responsible NASA organization, and RTOP number.

Facility (A.R.H.)

N81-20181# Los Alamos Scientific Lab., N. Mex. Design Engineering Div.

FUNDAMENTAL UNDERSTANDING OF MATTER: AN ENGINEERING VIEWPOINT

Hatice S. Cullingford and G. Edward Cort 1980 12 p refs Presented at the 3rd Miami Intern. Conf. on Alternative Energy

Sources, Miami Beach, Fla., 15-18 Dec. 1980

(Contract W-7405-eng-36)

(LA-UR-80-3585; CONF-801210-16)

HC A02/MF A01

Fundamental understanding of matter is a continuous process that should produce physical data for use by engineers and scientists in their work. Lack of fundamental property data in any engineering endeavor cannot be mitigated by theoretical work

that is not confirmed by physical experiments. An engineering viewpoint is presented to justify the need for understanding of matter. Examples are given in the energy engineering field to outline the importance of further understanding of material and fluid properties and behavior. Cases are cited to show the effects of various data bases in energy, mass, and momentum transfer. The status of fundamental data sources is discussed in terms of data centers, new areas of engineering, and the progress in measurement techniques. Conclusions and recommendations are outlined to improve the current situation faced by engineers in carrying out their work. DOE

N81-20964# National Aeronautics and Space Administration, Washington, D. C.

THE CONTEXT

In its Beyond the Atmosphere: Early Years of Space Sci. 1980 p 16-21 ref

Avail: NTIS MF A01; SOD HC \$11.00 CSCL 03C

The relationships among science, technology, and applications are discussed. Special emphasis is placed on public support of space exploration and aerospace sciences in general. Examples of technological spinoffs are presented. T.M.

N81-20966# National Aeronautics and Space Administration, Washington, D. C.

THE ROCKET AND SATELLITES RESEARCH PANEL: THE FIRST SPACE SCIENTISTS

In its Beyond the Atmosphere: Early Years of Space Sci. 1980 p 33-49

Avail: NTIS MF A01; SOD HC \$11.00 CSCL 22B

The development of rocket flight was examined with particular emphasis on its use in meteorological flight and atmospheric sounding. The growth of the research panel is described and the technological applications of the research is summarized. Important applications included: design of missiles, high-altitude craft, and space vehicles, special techniques of high-altitude navigation; study of climate; and military defense systems. T.M.

N81-20967# National Aeronautics and Space Administration, Washington, D. C.

THE ACADEMY OF SCIENCES STAKES A CLAIM

In its Beyond the Atmosphere: Early Years of Space Sci. 1980 p 50-57

Avail: NTIS MF A01; SOD HC \$11.00 CSCL 22A

The establishment of the National Committee for the International Geophysical year is described. Post-war development of the 1950's in the areas of upper atmosphere research reviewed and included: the further development of satellites; sounding rocket research; and the launching of the Sputnik Satellites. T.M.

N81-20975# National Aeronautics and Space Administration, Washington, D. C.

THE UNIVERSITIES: ALLIES AND RIVALS TO NASA

In its Beyond the Atmosphere: Early Years of Space Sci. 1980 p 223-242

Avail: NTIS MF A01; SOD HC \$11.00 CSCL 05A

NASA's association with the university is reviewed. The development of the 'sustaining university program' is traced historically along with other issues concerning grant policy. Graduate training programs, facility construction, and the development of research institutes are addressed. M.G.

N81-21087# Naval Postgraduate School, Monterey, Calif. **CHALLENGE FOR OPERATIONAL EXPERIENCE FEEDBACK IN AIRCRAFT DESIGN: AN AIRCRAFT DESIGN EXAMPLE M.B. Thesis**

Stanley John Swelker, Jr. Sep. 1979 138 p refs

(AD-A098088; NPS54-79-019)

HC A07/MF A01 CSCL 01/3

Since the early 1960's, the Department of Defense and the air transport industry have seen a downward trend in the number of new aircraft production starts. One of the effects of fewer new development programs has been a declining level of practical design experience acquired by individual engineers in aerospace design organizations. When compared to the growing need for design experience build-up, a result of expanding technology, the situation becomes worse. To acquire needed levels of practical design experience, feedback and utilization of operational experience is becoming increasingly important. Responsive feedback systems are used by the commercial air transport industry

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for providing operational experience applicable to product improvement and new development programs. Feedback systems in Naval aviation provide data and information for application primarily in areas of manpower and material management. This thesis analyzes and discusses the present situation and basic needs for operational experience feedback in aircraft design.

GRA

N81-21625# Houston Univ., Tex. Energy Lab.
A FEASIBILITY STUDY: MANAGEMENT OF SELECTED ASPECTS OF THE ADVANCED SOLAR THERMAL TECHNOLOGY PROGRAM BY A UNIVERSITY CONSORTIUM Final Report, 1 Jun. 1980 - Feb. 1981

A. F. Hildebrandt and J. H. U. Brown Feb. 1981 21 p refs (Contract DE-AC03-80SE-11422)

(SAN-1422-1) Avail: NTIS HC A02/MF A01

To increase the involvement of universities and advanced technology industries in task-oriented supporting research for the Solar Thermal Energy System (STES) program, organizational issues are considered. A generic and discipline focused program is considered which could provide applied research capabilities for all elements in the STES program. A management structure is presented which is organized around the management and research capabilities of universities.

S.F.

N81-21826# Stichting Mathematisch Centrum, Amsterdam (Netherlands). Dept. of Operations Research.

TIMETABLES FOR DENTAL STUDENTS

J. M. Anthonisse, B. J. Lageweg, and B. vanRij (Netherlands Dept for Land and Water Use, Utrecht) May 1980 27 p refs Submitted for publication

(MC-BW-124/80) Avail: NTIS HC A03/MF A01

A timetabling problem for the practical work which is to be performed by dental students is considered. At the beginning of the academic year each student receives an individual timetable, indicating his activities for the entire year. The timetables have to observe several types of requirements, such as capacity, frequency and precedence constraints. Moreover the capacity of one particular practicum should be equally distributed over the students, leaving as little spare capacity as possible. The time-tabling problem is decomposed into a series of sequencing problems which are solved by heuristic methods. A set of FORTRAN programs was written to store, retrieve, modify and print the individual time tables and related surveys. This approach allows for a large degree of flexibility in case of course changes.

Author (ESA)

N81-22364# Metcut Research Associates, Inc., Cincinnati, Ohio.
REPORT OF THE MACHINABILITY DATA CENTER Final Report, 1 Jan. 1978 - 30 Sep. 1980

John F. Kahles and John L. Krebs Jan. 1981 30 p

(Contract DLA900-77-C-3197)

(AD-A096557; AMMRC-TR-81-2; Rept-14) Avail: NTIS HC A03/MF A01 CSCL 05/2

This is the final report for the operation of the Machinability Data Center by Metcut Research Associates Inc. under government sponsorship. It is the culmination of a highly successful operation wherein all of the established goals have been achieved or exceeded. Cost savings through MDC's operation have been conservatively estimated to be over \$220 million from services provided since the Center began operation in 1964. Work was completed on the third edition of the Machining Data Handbook. This third editions is a greatly expanded and technically improved publication designed to meet the information demands of the manufacturing industry. The machining data are presented in both English and metric units to satisfy current U.S. needs. Handbook coverage is expanded from 1,100 to 1,500 materials and from 55 to 89 machining operations, including over 83,000 specific machining recommendations. New or expanded sections cover the nontraditional machining processes, machine chatter and vibration, surface finish and surface integrity, computer aided design and manufacturing, and grinding techniques. This new edition is expected to make a significant contribution toward reducing costs, increasing productivity, and increasing the service reliability of machined components.

GRA

N81-24980 Case Western Reserve Univ., Cleveland, Ohio.
A DYNAMIC RESOURCE ALLOCATION METHODOLOGY FOR LARGE TECHNOLOGY-BASED ORGANIZATIONS Ph.D. Thesis

Virendra Sharad Sherlekar 1981 404 p

Avail: Univ. Microfilms Order No. 8109609

A generalized framework for research and development (R&D) management, the Dynamic Resource Allocation Methodology (DRAM) for use in large technology based organizations is presented. The research effort provides an assessment of major issues in R&D allocation and the Zero-Base Budgeting (ZBB), and a test of applicability of DRAM to solar energy research, development and demonstration (RD&D) programs. DRAM utilizes: (1) Strategic Program Activity Networks (SPAN) to identify interdependencies, multi-period costs of development, and alternative funding levels analysis required by ZBB; (2) Goal Programming (GP) and Dynamic Programming (DP) approaches to determine funding levels for subsystems, and to select technical approaches such that the organization can determine optimum risk level and subsystem goals; (3) Eigenvalue prioritization to determine relative importance of multiple criteria, and a scoring model to determine priorities of technology options; and (4) GP and DP approaches to allocate resources to technology options in the ZBB process.

Dissert. Abstr.

N81-25860# National Aeronautics and Space Administration, Washington, D. C. Office of Equal Opportunity Programs.

WOMEN AT WORK IN NASA

Harriett G. Jenkins 1980 20 p

(NASA-TM-52358) Avail: NTIS HC A02/MF A01 CSCL 05A

Photographs and brief descriptions summarize the diversity of the female work force at NASA. Jobs are classified as: (1) technical support positions; (2) clerical and nonprofessional administrative; (3) professional administrative; and (4) professional scientific and engineering.

S.F.

N81-25864# California Univ., Livermore. Lawrence Livermore Lab.

REVIEW OF METHODS FOR EVALUATING R AND D

K. G. Feller 14 Nov. 1980 27 p refs

(Contract W-7405-eng-48)

(UCID-18890) Avail: NTIS HC A03/MF A01

Methods are reviewed of research and development (R and D) evaluation from the literature (in the industrial R and D setting and those proposed specifically for Federal R and D programs) relative to the types of R and D evaluation problems faced by DOE's Office of Advanced Conservation Technologies. Recommendations are made on the types of analysis which are more likely to make a useful contribution to the R and D management process. Specific methods are briefly summarized. The portfolio problem, i.e., the problem of allocating resources over several program elements which support related technologies, is examined.

DOE

N81-25872# North Carolina Univ. at Chapel Hill.

SCIENCE AND TECHNOLOGY FOR DEVELOPMENT: CORPORATE AND GOVERNMENT POLICIES AND PRACTICES

Jack N. Behrman and William A. Fischer Cambridge, Mass. Oelgeschlager, Gunn & Hain, Publishers, Inc. 1980 158 p ref Sponsored in cooperation with Fund for Multinational Management Education, New York (Grant NSF PRA-77-21851)

(PB81-146789; ISBN-0-89946-023-2; NSF/PRA-7721851/1; LC-79-27213) Avail: NTIS HC A08/MF A01 CSCL 05B

A series of case studies concerning research and development (R & D) activities of five transnational corporations (TNCs), initiated in 1977, was extended. In a phase involving 58 international companies operating in the United States, Europe, and Japan, the limits of inquiry were broadened. A better understanding of the relationship of science and technology (S & T) policies of developing countries to the R & D of international companies was sought. Nine less developed countries (LDCs) were included to determine ways other countries might help them develop indigenous capabilities. Three of the original studies are included, as well as findings of more recent investigations in the following areas: pharmaceutical programs in tropical diseases; S & T policies of developing countries; and United States response to S & T needs in industrial development of LDCs.

GRA

N81-26445# California Univ., Livermore. Lawrence Livermore Lab.

MANAGEMENT OF SHIVA OPTICS

F. T. Marchi and E. P. Wallerstein Sep. 1980 16 p Presented at the Huntsville Electro-Optical Technical Symp., Huntsville, Ala., 29 Sep. 1980
(Contract W-7405-eng-48)
(UCRL-84992; CONF-800982-2) Avail: NTIS HC A02/MF A01

In the design and procurement of a high power laser system such as the shiva fusion laser, the optical components are the single most important aspect for optimum laser performance. The cost, schedule and quality of the optics are the driving parameters for the entire program and many factors are involved in controlling, monitoring and evaluating these parameters. These factors include: (1) the procurement cycle; (2) knowledge of the vendors; (3) realistic specifications; (4) understanding of the fabrication process; (5) the quality control and test requirements. Guidelines and examples of the methods used in the procurement and qualification of the optics in shiva are presented. DOE

N81-26454# Council for Scientific and Industrial Research, Pretoria (South Africa). Technical Service Dept.

OPTIMISING MACHINING CONDITIONS

P. H. H. Trendler In *its* Mini-Seminars on Machining Technol. May 1980 20 p refs

Avail: NTIS HC A04/MF A01

With the ever increasing cost of production, as well as the shortage of skilled labor, more efforts are being made to optimize the many operations that make up the total manufacturing industry. The metal working industry, in particular, has been slow in its efforts to improve machining efficiency. An outline of practical considerations which must be satisfied before any attempt is made to optimize machining conditions is presented. To be considered are: the machine tool, work holding methods, dimensional accuracy of the work-piece, surface finish, material to be machined, materials handling, and cutting tools. T.M.

N81-26988# Harvard Univ., Boston, Mass. Graduate School of Business Administration.

THE TRANSFER OF TECHNOLOGY BY MULTINATIONAL ENTERPRISES: A SUMMARY OF THREE STUDIES

Robert B. Stobaugh and Piero Telesio (Tufts Univ.) Sep. 1980 19 p ref

(Grant NSF PRA-74-19491)

(PB81-159477; NSF/PRA-7419491/2) Avail: NTIS HC A02/MF A01 CSCL 05A

The studies concentrated on the transfer of manufacturing technology through licensing; and the choice of technology in investments in developing countries. The development of a computer model to optimize foreign investment location and intercompany trade decisions is summarized. GRA

N81-27380# Fondazione Ugo Bordoni, Rome (Italy).

REPORT ON COLLABORATION BETWEEN THE UGO BORDONI FOUNDATION AND THE SUPERIOR INSTITUTE OF POST AND TELECOMMUNICATIONS DURING 1979 Annual Report, 1979 [RELAZIONE SULL'ATTIVITA DI COLLABORAZIONE CON L'ISTITUTO SUPERIORE POSTE E TELECOMUNICAZIONI NEL 1979]

Renato Koch Feb. 1980 41 p refs In ITALIAN

Avail: NTIS HC A03/MF A01

The research activities are summarized. Main topics are radio communication systems, cable and digital communication systems, automatic systems for communication, management and control, and laser and optoelectronic systems. A list of publications is included. Author (ESA)

N81-27407# Aeronautical Research Labs., Melbourne (Australia). THE PRODUCTION OF PRINTED CIRCUIT BOARDS, PHOTO-ANODISED AND SCREEN PRINTED INSTRUMENT PANELS

B. F. Porritt Jan. 1981 44 p
(AD-A099587; ARL-ENG-FAC-TM-5; AR-002-255) Avail: NTIS HC A03/MF A01 CSCL 09/1

This note explains in detail, the manufacturing procedures adopted at A.R.L. for the production of single-sided, double-sided and through-hole plated printed circuit boards and anodised, photo-etched and screen-printed instrument panels. All manufacturing procedures, some original, were adopted only after extensive investigation and experimentation as to their compatibility with

the small batch requirements of A.R.L. Although the principal reason for the publication of this tech. memo. is for the use of personnel within A.R.L., the information may be of use to others intending to set up their own facilities for the manufacture of printed circuit boards. GRA

N81-27480*# Hewlett-Packard Co., Santa Clara, Calif.

R AND D: TO FUND OR NOT TO FUND

Terry N. Osterdock In NASA. Goddard Space Flight Center Proc. of the 12th Ann. Precise Time and Time Interval Appl. and Planning Meeting Mar. 1981 p 281-289

Avail: NTIS HC A99/MF A01 CSCL 05A

U.S. Government spending to fund the research and development of electronics for a variety of applications is discussed. Commercial enterprises also spend large sums on research and development of electronics and other areas of interest to the U.S. Government and its agencies. The government can take advantage of industrial research programs and thereby maximize the utilization of their own. S.F.

N81-28544# Galaxy, Inc., Washington, D.C.

JAPANESE RESEARCH AND DEVELOPMENT OF FUEL CELLS

Feb. 1981 28 p

(Contract DE-AC03-79SF-10538)

(DOE/SF-10538/T6) Avail: NTIS HC A03/MF A01

An overview of the Japanese fuel cell program is presented including an historical background of Japanese research and development of fuel cells, the research and development in the Moonlight Project, and a description of the current status of activities of private companies which expect to purchase fuel cells. DOE

N81-29034*# National Academy of Sciences - National Research Council, Washington, D. C.

NASA'S AERONAUTICS PROGRAM: SYSTEMS TECHNOLOGY AND EXPERIMENTAL PROGRAM Final Report

1980 40 p

(Contract NASw-2342)

(NASA-CR-164642) Avail: NTIS HC A03/MF A01 CSCL 05A

The appropriateness of the division of effort between the directed to the solution of near-term problems and that directed to long-term technical advances in the program is addressed. Comparisons between in-house work and out-of-house work are presented. Programs include those in: general aviation; propulsive lift; rotorcraft; avionics and flight controls; small transport aircraft; and human/vehicle systems. T.M.

N81-29055# National Academy of Sciences - National Research Council, Washington, D. C. Committee on Planetary and Lunar Exploration.

STRATEGY FOR THE EXPLORATION OF PRIMITIVE SOLAR-SYSTEM BODIES. ASTEROIDS, COMETS AND METEORIDS 1980-1990

1980 96 p

Avail: NTIS HC A05/MF A01

The relative significance of asteroids, comets, and meteoroids are assessed for understanding the solar system and its relation to the broader cosmos. A long term strategy is proposed for the explorations of asteroids and comets for approximately the decade of the 1980's. Important programmatic elements that support and implement the strategy are examined as well as the experimental capabilities available to carry out measurements needed to fulfill the scientific objectives. The role played by the study of the meteoroids (meteorites, meteors, and interplanetary dust) in an overall program of primitive body investigations is considered. A.R.H.

N81-29282# Vecor Newcastle Engineering Co. (Pty) Ltd. (South Africa).

OPTIMIZED MACHINERY

W. J. Botes In CSIR The 2nd Seminar on Efficient Metal Forming and Machining 18 Nov. 1980 10 p

Avail: NTIS HC A12/MF A01

The definition of optimized machining is discussed including the importance of identifying time consuming manual operations which form part of metal removal. Management approach in

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the jobbing shop is briefly addressed as well as an action program for increased production in the jobbing shop. Planning and organizing of higher efficiency is discussed and emphasis is placed on the importance of distinct machining instructions. J.M.S.

N81-31039# California Univ., Livermore. Lawrence Livermore Lab.

DECLINE IN US PRODUCTIVITY GROWTH AND THE ROLE OF R AND D FOR INNOVATION

A. L. Austin 1 Jan. 1981 21 p refs

(Contract W-7405-eng-48)

(UCRL-53135) Avail: NTIS HC A02/MF A01

A collection of data on productivity and innovation is presented. The report avoids drawing firm conclusions on the economic state of the nation or on policy recommendations, but instead, summarizes the implications. The decline in US productivity growth is affecting our economic health. The sluggish growth of per capita disposable income relative to other countries, the declining share of world trade, and decreased technological lead are among the symptoms of concern. Productivity increase will require revitalized innovation which, in turn, generally starts with R and D. These growing concerns will affect future R and D priorities and the traditional roles that public and private sectors have played. It is clear these two sectors will have increasing opportunities to work together in a more productive fashion with a common motivation to increase the US competitive position in world trade. Therefore, the government role in energy R and D may have to give way to greater role in civil R and D for innovation. DOE

N81-31134*# National Aeronautics and Space Administration. Langley Research Center, Hampton, Va.

NTF MANAGEMENT CONSIDERATIONS

Robert E. Bower *In its* High Reynolds Number Res. - 1980 Sep. 1981 p 31-36 refs

Avail: NTIS HC A14/MF A01 CSCL 14B

The National Transonic Facility (NTF) was designed to be a national testing facility satisfying the research and development needs of NASA, DOD, industry, and universities. The NTF offers simulation of full scale Reynolds numbers in the critical flight regions of most current and planned aerospace vehicles. The degree of interest by users will depend greatly upon tunnel productivity, data quality, and cost. E.A.K.

N81-31238# Systems Control, Inc., West Palm Beach, Fla. Champlain Technology Industries Div.

NATIONAL ICING FACILITIES REQUIREMENTS INVESTIGATION Final Report, 16 Dec. 1980 - 1 May 1981

F. R. Taylor and R. J. Adams Jun. 1981 151 p refs

(Contract DTFA01-80-C-10080)

(AD-A102520; FAA-CT-81-35)

Avail: NTIS

HC A08/MF A01 CSCL 14/2

An analysis of National Icing Facilities requirements was performed at the request of the Federal Aviation Administration. This effort consisted of a five-month investigation to determine the scope and character of current and future icing facilities needs. This investigation included current aircraft needs as well as facilities that might be required for icing research, developing and certification testing through the year 2000. The information used for this study included all icing certification regulations for both fixed wing airplanes and rotorcraft. These regulatory requirements for icing certification were supplemented by a comprehensive analysis of current and future aircraft operational requirements. This independent facility requirements assessment was then compared to a previously published NASA review of icing facilities capabilities. The conclusion was reached that the need for an inventory of National Icing Facilities currently exists and will become intensified in the next decade. The technical characteristics of these facilities were described and it was recommended that a joint FAA/NASA/DOD Task Force be established to formulate and spearhead the development of a National Icing Facilities Program. Author (GRA)

N81-31389# Exxon Research and Engineering Co., Florham Park, N.J.

EDS COAL LIQUEFACTION PROCESS DEVELOPMENT, PHASE 4. CONSTRUCTION OF EXXON COAL LIQUEFACTION PILOT PLANT Final Report

Mar. 1981 160 p Sponsored in part by DOE, Exxon Co., EPRI, Japan Coal Liquefaction Development Co., Phillips Coal Co., ARCO Coal Co., Ruhrkohle AG, and Agip S.P.A.

(Contract DE-AB01-77ET-10069)

(DOE/ET-10069/T4; FE-2893-66)

Avail: NTIS

HC A08/MF A01

Completion of the Exxon Coal Liquefaction Pilot Plant Program began in 1975 is detailed. The final cost of the plant was an increase of 7.3 percent over the original cost outlook. DOE

N81-31877 Michigan Univ., Ann Arbor.

AN APPROACH TO THE GENERATION OF SOFTWARE LIFE CYCLE SUPPORT SYSTEMS Ph.D. Thesis

Yuzo Yamamoto 1981 313 p

Avail: Univ. Microfilms Order No. 8116361

A class of computer-based systems, called life-cycle support systems (LSS's), that support the application in the systems department, is identified. The functions that an LSS must possess are: (1) accept system description in some predefined notation; (2) maintain a data base containing the system description; (3) perform analyses on the system description stored in the data base; (4) produce documentation and other outputs based on the system description, and (5) perform monitoring and other control functions of development activities. A specialized tool, the LSS generator is proposed. The LSS generator approach consists of two steps: (1) an LSS developer uses the LSS generator to define an LSS in a formal language; (2) the definition of an LSS is processed to generate the LSS software and documentation. In order to do this, the LSS generator must have a model (meta-model) of information processing system models and a language definition facility. Dissert. Abstr.

N81-31884# Mitre Corp., McLean, Va.

CANDIDATE R&D THRUSTS FOR THE SOFTWARE TECHNOLOGY INITIATIVE Final Report

Samuel T. Redwine, Jr., Eric D. Siegel, and Gilbert R. Berglass May 1981 216 p refs

(Contract F19628-81-C-0001; AF Proj. 8920)

(AD-A102180; MTR-81W00160)

Avail: NTIS

HC A10/MF A01 CSCL 05/1

This document is the first iteration towards a technical plan for the DoD Software Technology Initiative, and is intended for review and comment. The background of the Initiative and DoD's historical difficulties with software are covered. Tentative candidates for R D support are discussed in the sequence of their potential for significant incremental payoff -- short-term, (less than 4 years), medium-term (4-7 years), and long-term (more than 7 years). More detailed discussion of the candidates and a list of ideas tentatively rejected are included in appendices. Reviewers should comment using the questionnaire. Author (GRA)

N81-31895# California Univ., Livermore. Lawrence Livermore Lab.

FACILITY MANAGEMENT OF COMPUTER-AIDED DESIGN, DRAFTING/MANUFACTURING SYSTEMS (CADD/M)

Frederick J. Norton 23 Sep. 1980 50 p Presented at the

6th Ann. ADUA Meeting, Denver, 30 Sep. - 3 Oct. 1980

Submitted for publication

(Contract W-7405-eng-48)

(UCRL-84959; CONF-8009151-1)

Avail: NTIS

HC A03/MF A01

Interactive computer aided design drafting manufacturing system are described. A gap exists between the capabilities of CADD/M systems and the actual usage by industry of those capabilities. The responsibilities of the interactive graphics facility management team are explained in detail. It is concluded that proper management of a CADD/M facility is more critical to the success or failure of the facility than any other factor. DOE

N81-32476# Computer Systems Management, Inc., Arlington, Va.

VIDEO-BASED SYSTEMS RESEARCH, ANALYSIS, AND APPLICATIONS OPPORTUNITIES Quarterly Technical Report, 1 Apr. - 30 Jun. 1981

J. F. Wittmayer, III 30 Jul. 1981 111 p refs

(Contract MDA903-80-G-0155; ARPA Order 3829)

(AD-A102627; CSM-81-03) Avail: NTIS HC A06/MF A01 CSCL 17/2

Video technology is growing rapidly providing new opportunities for DOD research, analysis, and applications especially in the areas of optical video discs, computer-based microfilm and microfiche, shared analysis or network systems, and video taping and playback. These technologies can be applied variously to intelligence, training, and information management problems in some very unique and cost-effective ways. Author (GRA)

N81-33138# French Army, Villacoublay-Air (France).
**INCIDENTS OF PROBLEMS IN SETTING TO WORK ON
 THE CONCEPTUAL DESIGN OF HELICOPTERS [INCID-
 ENCES DES PROBLEMES DE MISE EN OEUVRE SUR LA
 CONCEPTION DES HELICOPTERES]**

M. G. Cannel /in AGARD The Impact of Mil. Appl. on Rotorcraft
 and V/STOL Aircraft Design Jun. 1981 12 p In FRENCH

Avail: NTIS HC A12/MF A01

The problems focused on concern only the development and design of military helicopters. The general operational requirements of today's military helicopter were reviewed. The immediate problems facing the helicopter industry are discussed. Technological forecasts for the next 20 years are presented with emphasis on the direction that research management will take in helicopter design. T.M.

N81-33322# Stuttgart Univ. (West Germany).
**STAGES OF DEVELOPMENT. A CENTURY OF MEASURING
 TECHNIQUES IN A TESTING LABORATORY [STADIEN
 EINER ENTWICKLUNG - EIN JAHRHUNDERT MES-
 STECHNIK AM MASCHINENLABORATORIUM]**

M. Busch /in its Commemoration of 60th Anniv. of Professor
 Dr. Jakob Wachter Jan. 1980 p 9-34 refs In GERMAN

Avail: NTIS HC A16/MF A01

The rise of technical institutes as a consequence of industrial expansion is traced. The creation of a testing laboratory for students and its extension to other types of energy conversion equipment is described. The appropriateness of the present organizational structure in technical education is discussed, and the need for modern electronic measuring equipment stressed.

Author (ESA)

N81-33363 Newcastle-upon-Tyne Univ. (England). Dept. of
 Mechanical Engineering.

**AN APPROACH TO THE POTENTIAL IMPORTANCE OF
 INFORMATION IN ENGINEERING**

A. S. Ritz and B. S. Owen Jan. 1981 202 p refs Sponsored
 by British Library Lending Div.

(BLL-BLRDR-5603) Avail: British Library Lending Div., Boston
 Spa, Engl.

The potential value of information in the execution of engineering projects was assessed. For each of three projects the background of potentially useful information was explored and compared with the information actually being used, methods being chosen in each case to suit the circumstances. It was found necessary to become familiar with the technical detail of the projects and to examine critically the research aims and information practices. In general no vast reservoir of immediately useful information was found, much of the information used deriving from the individual engineer's own training and resources. The information flow was regarded as adequate for the practical purposes of the projects. However, awareness of research information potentially useful for long range planning was limited, the main obstacles to information flow of this type are management, attitudes, and organizational constraints. J.M.S.

N81-33819# Wisconsin Univ. - Madison. Graduate School of
 Business.

ORGANIZATIONAL BEHAVIOR

Larry L. Cummings and R. B. Dunham 3 Aug. 1981 91 p
 refs

(Contract N00014-79-C-0750; NR Proj. 170-892)

(AD-A103625; TR-1-1-8) Avail: NTIS HC A05/MF A01 CSCL
 05/1

This paper reviews the literature on organizational behavior from 1977 through the first quarter of 1981 and attempts to be projective and prescriptive as well as descriptive of the work covered. Selected topics reviewed include new overviews and integrations of the field, task design, feedback, organizational structure, technology, and control, new conceptualizations and

emerging topical trends. These topics were chosen to reflect both current and controversial issues to recent research. Additionally, this review attempts to bring the macro or organizational side of organizational behavior into focus and analysis and conclusions are drawn concerning theoretical and research needs. Finally, it projects the likely developments within organizational behavior. Author (GRA)

N81-34069*# Stanford Univ., Calif. Dept. of Engineering-
 Economic Systems.

A SURVEY OF MACHINE READABLE DATA BASES

Peter Matlock Aug. 1981 60 p refs

(Contract NASw-3204)

(NASA-CR-164859; Rept-34) Avail: NTIS HC A04/MF A01
 CSCL 05B

Forty-two of the machine readable data bases available to the technologist and researcher in the natural sciences and engineering are described and compared with the data bases and data base services offered by NASA. J.D.H.

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PROJECT OR SYSTEMS MANAGEMENT

Includes operations research, management information systems, and program management.

A81-11002 # Three-dimensional periodic oscillations of a satellite relative to its center of mass (Prostranstvennye periodicheskie kolebaniia sputnika otnositel'no tsentra mass). V. A. Sarychev, V. V. Sazonov, and N. V. Mel'nik. *Kosmicheskie Issledovaniia*, vol. 18, Sept.-Oct. 1980, p. 659-677. 10 refs. In Russian.

The paper obtains periodic solutions of a system of sixth-order ordinary differential equations that describes the motion of a satellite relative to its center of mass in a Keplerian elliptical orbit. For weakly elliptical orbits, a class of periodic solutions is obtained which coincide with Liapunov solutions for circular orbits. These solutions are extended to large values of eccentricity. A numerical algorithm is presented. B.J.

A81-14134 Systems engineering - An approach to whole-system design. P. K. M'Pherson (City University, London, England). *Radio and Electronic Engineer*, vol. 50, Nov.-Dec. 1980, p. 545-558. 20 refs.

After a review of the origins of systems engineering, the paper examines the systems concepts that underlie systems engineering. Attention is given to the whole-system concept and to the system life cycle, and systems engineering practice is clarified through an examination of systems organization, design, and planning perspectives. Some applications of systems engineering are discussed. B.J.

A81-20971 Refining and optimization in multilayers. A. L. Bloom (Coherent, Inc., Palo Alto, Calif.). *Applied Optics*, vol. 20, Jan. 1, 1981, p. 66-73. 26 refs.

An important aspect of modern thin film design is the use of computers to match the multilayer parameters to a set of optical specifications such as a desired reflectance curve. Modern optimization algorithms as they apply to thin film design are discussed. The two algorithms that have proven successful - a modification of the damped least squares method common in lens design, and a gradient (steepest descent) method using several different merit functions are compared. Examples of designs obtained by optimization techniques are given, including some in which the process achieved the theoretically optimum design starting from arbitrary or simple quarterwave initial designs. Optimization techniques other applications in thin films including the determination of dispersion characteristics of single layers and design of masks for coating tanks. (Author)

A81-20978 Scaling of tokamak reactor costs. W. R. Spears and J. A. Wesson (EURATOM and U.K. Atomic Energy Authority Fusion Association, Culham Laboratory, Abingdon, Oxon, England). *Nuclear Fusion*, vol. 20, Dec. 1980, p. 1525-1532. 11 refs.

A simple model describing the scaling laws of tokamak fusion reactors is used to derive the dependence of capital cost on the basic parameters involved. The beta value required for each set of parameters is normalized to an equivalent beta in JET to provide a uniform measure of feasibility. The capital cost is related to the engineered volume per unit of power. The simplicity of the model and the uncertainty of the assumptions exclude a precise evaluation, but do allow an overview of the essential features arising in a reactor assessment. (Author)

A81-21394 Linear network and systems theory (Théorie des réseaux et systèmes linéaires). M. Feldmann (Ecole Nationale Supérieure des Télécommunications, Paris; CNET, Issy-les-Moulineaux, Hauts-de-Seine, France). Paris, Editions Eyrolles, 1981. 382 p. 76 refs. In French. \$30.

The book treats the modeling, analysis and synthesis procedures used in the study of the relationships between the characteristics of a group of physically connected elements and the characteristics of the elements taken separately, which forms the subject of network and systems theory. The concepts of a permanent causal linear system

and Kirchhoff networks are introduced, and flow graph theory is presented and applied to regeneration. A description of linear systems in terms of state variables is presented, and the physical or topological invariants of networks are pointed out. Classical methods of network analysis are examined, and energy problems in linear and permanent networks are considered. Consideration is then given to some typical circuits, network transformations and functions, and a series of integral relations comprising the fundamental limitations to circuit characteristics. The problems of the synthesis of a passive dipole, a quadrupole and transfer functions are treated, and the characterization and synthesis of filters, including frequency filters, passive LC filters, narrowband filters and active filters, are discussed. A.L.W.

A81-22214 Applications of simulation in project management. J. E. Hebert (U.S. Naval Academy, Annapolis, Md.). In: Winter Simulation Conference, San Diego, Calif., December 3-5, 1979, Proceedings. Volume 1. New York, Institute of Electrical and Electronics Engineers, Inc., 1979, p. 211-219. 11 refs.

Traditional simulation procedures that have been applied to project management are reviewed, and new developments concerning the application of simulation to project management are discussed. Specifically, attention is given to PERT networks, GERT project networks, and project control networks (i.e., the simulation of updated networks). B.J.

A81-23170 # Structural features of the bonding phase in the system W-Ni-Fe (Nekotorye strukturnye osobennosti fazy-sviazki splavov v sisteme W-Ni-Fe). R. V. Minakova, N. A. Storchak, P. A. Verkhovodov, L. G. Bazhenova, and V. L. Poltoratskaia (Akademiia Nauk Ukrainskoi SSR, Institut Problem Materialovedeniia, Kiev, Ukrainian SSR). *Poroshkovaia Metallurgii*, Dec. 1980, p. 45-50. 16 refs. In Russian.

The grain size, lattice spacing, and structural component distribution of the fusible bonding phase of an alloy containing 90% W and 10% Ni, Fe have been studied as a function of cooling conditions and subsequent heat treatment. It is shown that changes of the lattice spacing of the fcc bonding phase are associated with the temperature dependence of tungsten solubility and its redistribution between the grain body and the boundaries of the principal phase components. V.L.

A81-30332 # Integration of the F-16 Weapon System Trainer. J. F. Lethert (USAF, Aeronautical Systems Div., Wright-Patterson AFB, Ohio). In: NAECON 1980; Proceedings of the National Aerospace and Electronics Conference, Dayton, Ohio, May 20-22, 1980. Volume 3. New York, Institute of Electrical and Electronics Engineers, Inc., 1980, p. 1036-1038.

The paper describes the integration of several systems that make up the F-16 Weapons Systems Trainer. Each system is purchased on a separate contract. The paper discusses the principles used to integrate the systems and the application of the principles to computer hardware and computer software. (Author)

A81-31141 An organizational view of distributed systems. M. S. Fox (Carnegie-Mellon University, Pittsburgh, Pa.). *IEEE Transactions on Systems, Man, and Cybernetics*, vol. SMC-11, Jan. 1981, p. 70-80. 38 refs. Contract No. F33615-78-C-1551. ARPA Order 6597.

The relationship between organization theory and distributed systems is studied. By viewing distributed systems as analogous to human organizations, concepts and theories germane to the management science field of organized theory can be applied. Task complexity, uncertainty, coupled with resource constraints are shown to be important factors in deciding how a system is to be distributed. (Author)

A81-32175 A probability approach for the optimization of the PERT network and investments in R and D projects. Y. Ettinger and G. Frank (Atomic Energy Commission, Soreq Nuclear Research Centre, Yavne, Israel). *IEEE Transactions on Engineering Management*, vol. EM-28, May 1981, p. 31-38.

A probability approach for accounting for uncertainties in the

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duration of activities in a PERT network is proposed. The effects of a delay in an activity on related activities are considered. They are incorporated in a stochastic network which permits a more realistic and comprehensive estimate of the time needed for executing a project. A sensitivity analysis indicates and evaluates the critical activities which will have a pronounced effect on the progress of the project. Following the sensitivity analysis an optimization scheme is devised for investment of additional resources in critical activities, in order to minimize cost or extension of the project timetable. Optimization criteria for investments of additional resources in delayed activities are also derived and the importance of a reliable reporting system is demonstrated. (Author)

A81-33550 * The work breakdown structure in software project management. R. C. Tausworthe (California Institute of Technology, Jet Propulsion Laboratory, Pasadena, Calif.). *Journal of Systems and Software*, vol. 1, 1980, p. 181-186. 7 refs. Contract No. NAS7-100.

A work breakdown structure (WBS) is defined as an enumeration of all work activities in hierarchic refinement of detail which organizes work to be done into short manageable tasks with quantifiable inputs, outputs, schedules, and assigned responsibilities. Some of the characteristics and benefits of the WBS are reviewed, and ways in which these can be developed and applied in software implementation projects are discussed. Although the material is oriented principally toward new-software production tasks, many of the concepts are applicable to continuing maintenance and operations tasks. C.R.

A81-33881 # Developing aircraft through joint venture programs. R. H. Beteille (Airbus Industrie, Blagnac, Haute-Garonne, France). *AIAA, SAE, ASCE, ATRIF, and TRB, International Air Transportation Conference, Atlantic City, N.J., May 26-28, 1981, AIAA Paper 81-0794*. 5 p.

Development of modern advanced technology aircraft has become more and more difficult and much too costly for a single manufacturer to undertake the task alone. Joint ventures offer an attractive solution. Recent experience has shown that the 'old' concept of a 'dominant' manufacturer who retains full initiative, management and marketing responsibilities can be equalled in efficiency by real 'cooperative ventures'. The key elements in such ventures are that pragmatic organisational and cooperative behavioral solutions are used. The positive aspects of joint 'team' work can indeed more than compensate for the apparently increased complexity. From the experience gained in the last 14 years, in the European Airbus programme, examples are given of representative problems and their solutions. Some of the resulting general conclusions, which in most cases have contributed to a greater unity of purpose and efficiency, are outlined. (Author)

A81-34368 * # Small self-contained payload overview. D. S. Miller (NASA, Office of Space Transportation Operations, Washington, D.C.). *American Institute of Aeronautics and Astronautics, Annual Meeting and Technical Display on Frontiers of Achievement, Long Beach, Calif., May 12-14, 1981, Paper 81-0950*. 7 p.

The low-cost Small Self-Contained Payload Program, also known as the Getaway Special, initiated by NASA for providing a stepping stone to larger scientific and manufacturing payloads, is presented. The steps of 'getting on board,' the conditions of use, the reimbursement policy and the procedures, and the flight scheduling mechanism for flying the Getaway Special payload are given. The terms and conditions, and the interfaces between NASA and the users for entering into an agreement with NASA for launch and associated services are described, as are the philosophy and the rationale for establishing the policy and the procedures. K.S.

A81-36865 Managing in the project environment. W. C. Wall, Jr. (U.S. Army, Missile Command, Redstone Arsenal, Ala.). In: *Management of optics; Proceedings of the Seminar, Huntsville, Ala., October 1, 2, 1980*. Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers, 1981, p. 24-28. 13 refs.

Project management is a concept for managing complex one-time tasks. It provides a vehicle for centralizing management responsibility and accountability and may be used under a variety of

circumstances. This paper looks at the conceptual basis of military project management, examines its appearance and how it operates organizationally, discusses the major relationships involved, and suggests several desirable personal characteristics of a military project manager. (Author)

A81-36871 Management of the development of a 72-inch, airborne, long range oblique photographic /LOROP/ camera. C. S. Morser (ITEK Corp., Optical Systems Div., Lexington, Mass.). In: *Management of optics; Proceedings of the Seminar, Huntsville, Ala., October 1, 2, 1980*. Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers, 1981, p. 81-90.

Successful development of a high performance airborne camera requires effective program management. Critical factors essential to successful program management are discussed, with emphasis on the planning and implementation of the program plan. Activities are described that were essential to the management of the development and manufacture of a 72-in. focal length panoramic camera designed for long range oblique photographic (LOROP) missions. (Author)

A81-36872 * Definition of optical systems payloads. J. A. Downey, III (NASA, Marshall Space Flight Center, Huntsville, Ala.). In: *Management of optics; Proceedings of the Seminar, Huntsville, Ala., October 1, 2, 1980*. Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers, 1981, p. 92-96.

The various phases in the formulation of a major NASA project include the inception of the project, planning of the concept, and the project definition. A baseline configuration is established during the planning stage, which serves as a basis for engineering trade studies. Basic technological problems should be recognized early, and a technological verification plan prepared before development of a project begins. A progressive series of iterations is required during the definition phase, illustrating the complex interdependence of existing subsystems. A systems error budget should be established to assess the overall systems performance, identify key performance drivers, and guide performance trades and iterations around these drivers, thus decreasing final systems requirements. Unnecessary interfaces should be avoided, and reasonable design and cost margins maintained. Certain aspects of the definition of the Advanced X-ray Astrophysics Facility are used as an example. J.F.

A81-36873 * Scientific management of Space Telescope. C. R. O'Dell (NASA, Marshall Space Flight Center, Huntsville, Ala.). In: *Management of optics; Proceedings of the Seminar, Huntsville, Ala., October 1, 2, 1980*. Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers, 1981, p. 97-100.

A historical summary is given on the science management of the Space Telescope, the inception of which began in 1962, when scientists and engineers first recommended the development of a nearly diffraction limited substantial-size optical telescope. Phase A, the feasibility requirements generation phase, began in 1971 and consisted largely of NASA scientists and a NASA design. Phase B, the preliminary design phase, established a tiered structure of scientists, led by the Large Space Telescope operations and Management Work Group. A Mission Operations Working Group headed six instrument definition teams to develop the essential instrument definitions. Many changes took place during Phase B, before design and development, which began in 1978 and still continues today. J.F.

A81-36876 * Management of optics. T. E. Kirchner and M. Russell (American Science and Engineering, Inc., Cambridge, Mass.). In: *Management of optics; Proceedings of the Seminar, Huntsville, Ala., October 1, 2, 1980*. Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers, 1981, p. 114-120. Contract No. NAS8-30750.

American Science and Engineering, Inc., designed the large X-ray optic for the HEAO-2 X-ray Telescope. The key element in this project was the High Resolution Mirror Assembly (HRMA), subcontracting the fabrication of the optical surfaces and their assembly and alignment. The roles and organization of the key participants in the creation of HRMA are defined, and the degree of interaction between the groups is described. Management of this effort was extremely complex because of the intricate weaving of responsibilities, and AS&E, as HEAO-2 Program managers, needed to be well versed in the scientific objectives, the technical requirements,

the program requirements, and the subcontract management. Understanding these factors was essential for implementing both technical and management controls, such as schedule and budget constraints, in-process control, residence requirements, and scientist review and feedback. Despite unforeseen technical problems and interaction differences, the HEAO-2 was built on schedule and to specification. J.F.

A81-36877 Management of optical projects. P. S. Young and D. R. Olson (Perkin-Elmer Corp., Norwalk, Conn.). In: Management of optics; Proceedings of the Seminar, Huntsville, Ala., October 1, 2, 1980. Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers, 1981, p. 121-126.

This paper discusses the management of optical projects from the concept stage, beginning with system specifications, through design, optical fabrication and test tasks. Special emphasis is placed on effective coupling of design engineering with fabrication development and utilization of available technology. Contrasts are drawn between accepted formalized management techniques, the realities of dealing with fragile components and the necessity of an effective project team which integrates the special characteristics of highly skilled optical specialists including lens designers, optical engineers, opticians, and metrologists. Examples are drawn from the HEAO-2 X-ray Telescope and Space Telescope projects. (Author)

A81-41375 The design structure system - A method for managing the design of complex systems. D. V. Steward (California State University, Sacramento, CA). *IEEE Transactions on Engineering Management*, vol. EM-28, Aug. 1981, p. 71-74. 5 refs.

The paper explains how the techniques of the 'design structure system' can be applied to organize the design of a system by developing an effective engineering plan, showing where estimates are required, and analyzing the flow of information occurring during design work. Techniques shown acknowledge circuits for determination of interdependent variables, which require planning decisions on how to iterate and where to use estimates, and can be used to determine the consequences of a change in any variable on the rest of the variables in the system. With the variables reordered by partitioning and tearing in the 'design structure matrix', a critical path schedule can be developed for implementing the change. Ideally suited to an Automated Design Office, this method is also effective in classical engineering environments. D.L.G.

A81-41721 Systems engineering and analysis. B. S. Blanchard and W. J. Fabrycky (Virginia Polytechnic Institute and State University, Blacksburg, VA). Englewood Cliffs, NJ, Prentice Hall, Inc., 1981. 715 p. 166 refs. \$28.95.

An introduction to systems is provided and tools for systems analysis are considered, taking into account system definitions and concepts, approaches for bringing systems into being, models in systems analysis, economic analysis techniques, mathematical modeling and optimization, probability and statistics, queuing theory and analysis, and control concepts and techniques. The system design process is discussed along with the design for operational feasibility, systems engineering management, and system design case studies. Attention is given to conceptual design, preliminary system design, detail design and development, system test and evaluation, design for reliability, design for maintainability, design for supportability, design for economic feasibility, communication system design, finite population system design, energy storage system design, and procurement-inventory system design. G.R.

A81-41904 Geothermal energy projects - Planning and management. Edited by L. J. Goodman (East-West Center, Honolulu, HI) and R. N. Love (Massey University, Palmerston North, New Zealand). New York and Oxford, Pergamon Press, 1980. 244 p. \$33.

A presentation is made of management requirements for the development of geothermal resources by citing three major, and successful, projects: the Wairakei geothermal power project of New Zealand, the Hawaii geothermal project of the United States, and the Tiwi geothermal project of the Philippines. The three case studies are presented according to a format in which the history of each project falls into four phases: (1) planning, appraisal and design; (2) section, approval and activation; (3) operation, control and handover; and (4)

evaluation and refinement. Each case study furnishes extensive performance and economic figures, along with consideration of such related issues as geothermal effluent chemical content, infrastructural requirements, and environmental impact. O.C.

A81-41922 * # Evaluating a Scientific and Technical Information program - The user perspective. T. E. Pinelli (NASA, Langley Research Center, Scientific and Technical Information Div., Hampton, VA), E. M. Cross, and M. Glassman (Old Dominion University, Norfolk, VA). *International Technical Communications Conference, 28th, Pittsburgh, PA, May 20-23, 1981, Paper, 4 p.*

The project concerned with the evaluation of the Scientific and Technical Information (STI) program of the NASA Langley Research Center utilizes both survey research and system analysis techniques, includes all elements of the STI program, discloses the strengths and weaknesses of the STI program, and identifies ways in which the program could be modified to improve its overall efficiency and effectiveness. Phase I of the project employed survey research to assess the adequacy of the Langley STI program in meeting the information needs of Langley engineers and scientists. The results of the user survey provided information to aid management in choosing the services and processes which are likely to produce a high degree of user satisfaction and the most efficient use of resources. G.R.

A81-43162 # The technical and managerial challenge of integrated flight/fire control. J. Hunter and R. Holdridge (USAF, Flight Dynamics Laboratory, Wright-Patterson AFB, OH). *American Institute of Aeronautics and Astronautics, Aircraft Systems and Technology Conference, Dayton, OH, Aug. 11-13, 1981, Paper 81-1706, 8 p.*

An employment of an Integrated Control System results in a greatly decreased workload for the pilot compared to an aircraft employing separate subsystems. The decreased workload gives the pilot more time and attention for crisis management. A description is presented of the problems encountered in the Integrated Flight/Fire Control (IFFC) Program, taking into account also the approaches used to solve these problems. Four specific problem areas related to the technical and program management aspects of integrated control are considered, giving attention to interfaces, software design and testing, integration testing, and system flexibility and follow-on planning. An IFFC system uses weapon aiming error from the fire control system to assist the pilot in flying the aircraft. Expected mission improvements include more accurate and quicker weapon delivery and improved attacker survivability. The IFFC program includes the design, fabrication, ground test, and flight test of an IFFC system on an F-15B aircraft. G.R.

A81-43167 # The use of a group design study in systems engineering education. P. J. Torvik (USAF, Institute of Technology, Wright-Patterson AFB, OH). *American Institute of Aeronautics and Astronautics, Aircraft Systems and Technology Conference, Dayton, OH, Aug. 11-13, 1981, Paper 81-1726, 11 p. 9 refs.*

The graduate program in Systems Engineering at the Air Force Institute of Technology uses a group design study as a focal point. Nine such studies have now been completed. In each case, the entire class has been organized into a design team and major project has been completed for a sponsoring Air Force organization. The topic is selected by the students from candidates solicited by the faculty. The study requires a full year from selection of the project to presentation of the final report and is advised throughout by a faculty team which provides advice, tutorials, and evaluation. The success of such studies has been found to depend upon four elements: (1) a source of projects, (2) dedicated students with individual specializations, but with some common background, (3) a group which can remain together and work at the same pace, and (4) an available faculty with broad expertise. (Author)

A81-47413 The effect of scale on satellite costing. J. A. Vandenkerckhove (ESA, Paris, France). *International Astronautical Federation, International Astronautical Congress, 32nd, Rome, Italy, Sept. 6-12, 1981, Paper 81-223, 18 p. 5 refs.*

This paper proposes a simplified model whereby the total costs of a project can be calculated as a function of its size or scale. Spacecraft procurement costs, test and check-out costs, operations and launch costs are accounted for, as well as the internal costs of

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the sponsoring agency (ESA, NASA, etc.), differentiating between recurrent and nonrecurrent costs. Examples are given of two typical satellite families varying in scale: geostationary telecommunications satellites and earth observation satellites in sun-synchronous orbit. Finally, the results for the telecommunications spacecraft are compared with cost formulas of U.S. origin. (Author)

A81-47560 # Project Materials Laboratory - A contribution to materials research and processing technology under conditions of microgravity in the first Spacelab mission (Projekt Werkstofflabor - Ein Beitrag zur Werkstoff-Forschung und Verfahrenstechnik unter Mikrogravitation in der ersten Spacelab-Mission). H. Steimle and H. Binnenbruck (Deutsche Forschungs- und Versuchsanstalt für Luft- und Raumfahrt, Bereich für Projektträgerschaften, Cologne, West Germany). *Deutsche Gesellschaft für Luft- und Raumfahrt, Jahrestagung, Aachen, West Germany, May 11-14, 1981, Paper 81-085*. 21 p. In German.

The Materials Laboratory (MSDR-Material Science Double Rack) is a pilot project of the Spacelab utilization program of the Federal Republic of Germany. The First Spacelab Payload (FSLP) is considered, taking into account the project organization of the FSLP, a system description, the power supply, the central computer unit, the device for measuring acceleration, the vacuum gas system, the water cooling system, and the avionics air loop. The experiments to be conducted are related to the solidification of alloys, diffusion phenomena, the growth of semiconductor crystals and organic crystals, the behavior of liquid columns, and Marangoni convection. G.R.

N81-10084*# National Aeronautics and Space Administration, Washington, D. C.

MISSION OPERATION REPORT: FLTSATCOM-D LAUNCH

30 Oct. 1980 22 p
(NASA-TM-82218; M-O-491-202-80-80-04) Avail: NTIS HC A02/MF A01 CSCL 22A

FLTSATCOM is an advanced Earth satellite designed to provide extensive communication capability for the USAF and USN. The satellites are to be placed in synchronous, near equatorial orbits and provide 23 UHF and one SHF channels. Mission objectives, mission description, spacecraft description, launch vehicle configuration, and organization and responsibilities are described. L.F.M.

N81-11664*# Ford Aerospace and Communications Corp., Houston, Tex.

REAL-TIME OPERATING SYSTEM FOR SELECTED INTEL PROCESSORS

W. R. Pool In NASA. Goddard Space Flight Center Aerospace Appl. of Microprocessors 1980 p 151-156

Avail: NTIS HC A12/MF A01 CSCL 09B

The rationale for system development is given along with reasons for not using vendor supplied operating systems. Although many system design and performance goals were dictated by problems with vendor supplied systems, other goals surfaced as a result of a design for a custom system able to span multiple projects. System development and management problems and areas that required redesign or major code changes for system implementation are examined as well as the relative successes of the initial projects. A generic description of the actual project is provided and the ongoing support requirements and future plans are discussed. A.R.H.

N81-13077*# McDonnell-Douglas Astronautics Co., Huntington Beach, Calif.

CONCEPTUAL DESIGN STUDY SCIENCE AND APPLICATIONS SPACE PLATFORM SASP, VOLUME 3: PROGRAMMATICS, COST AND SCHEDULE REPORT

Fritz C. Runge Oct. 1980 59 p refs 3 Vol.
(Contract NAS8-33592)
(NASA-CR-161617; MDC-G9246-Vol-3) Avail: NTIS HC A04/MF A01 CSCL 22B

Mission planning and project management methods are described. Cost estimates for the project are presented. A review of scheduling, budgeting, and facilities is also presented. T.M.

N81-13665# Army War Coll., Carlisle Barracks, Pa.

SOFTWARE MANAGEMENT

Philip S. Threefoot 28 May 1980 32 p refs
(AD-A091253) Avail: NTIS HC A03/MF A01 CSCL 09/2

The purpose of the paper is to outline practical management techniques tailored to the uniqueness of software development. The central theme is visibility into the software development and the ways to achieve it. The areas of documentation, testing, personnel, configuration management, and incentives are examined. The techniques described were developed while managing the software for the Tactical Fire Direction System, a software intensive, command and control system containing approximately one million lines of source code. GRA

N81-13663# Mitre Corp., Bedford, Mass.

FY 79 SOFTWARE ACQUISITION PROCESS MODEL TASK: REVISION 1 Final Report

Oscar Shapiro and John B. Glone Jul. 1980 229 p refs
(F19628-80-C-0001; AF Proj. 5720)

(AD-A091031; MTR-3871-Rev-1; ESD-TR-80-129-Rev-1) Avail: NTIS HC A11/MF A01 CSCL 15/5

This final report on the FY 79 Project 5220 Software Acquisition Process Model Task (522F) presents the approach taken to process model definition, quantification, and simulation; accomplishments; and status at the fiscal year's end. The report also identifies desirable improvements and outlines a plan for their incorporation and application in successive process model versions. The report contains diagrams that represent the Full-Scale Development Phase of the Major System Acquisition Life Cycle. These diagrams can provide useful reference material for anyone who is (or expects to be) engaged in the planning or monitoring of a system development contract. Revision 1 eliminates references to several documents not in the public domain. These changes, made to secure public release, are all minor. In addition, minor errors have been corrected. GRA

N81-14678# Sandia Labs., Albuquerque, N. Mex. Computer Communications Design Div.

AN OVERVIEW OF A MINICOMPUTER NETWORK

Michael O. Vahle and Lawrence F. Tolendino Aug. 1980 29 p
Sponsored by DOE

(SAND-80-0821) Avail: NTIS HC A03/MF A01

A computer network was developed to support minicomputers used at a number of locations within Sandia National Laboratories. The control strategies, capabilities, and design philosophies of the minicomputer network are described. Author

N81-15851# Department of Energy, Washington, D. C. Office of Fusion Energy.

THE OFFICE OF FUSION ENERGY RECOMMENDATIONS ON THE ELMO DUMPY TORUS PROOF OF PRINCIPLE EXPERIMENT SITE SELECTION Final Report, Sep. 1980

Nov. 1980 22 p
(DOE/ER-0077) Avail: NTIS HC A02/MF A01

The selection process for the site of the Elmo Bumpy Torus (EBT) proof of principle experiment is discussed. The detailed procurement and evaluation procedures to be followed are specified and the roles of industry and the signatories are defined. The three primary factors considered in site comparisons were relative cost, schedule impact, and program flexibility and control. In addition a brief description of the EBT concept is given. M.G.

N81-15894# National Aerospace Lab., Amsterdam (Netherlands). Afdeling Wetensch. Diensten.

THE ROLE OF SCIENTIFIC ENGINEERS IN THE REALIZATION OF INFORMATION SYSTEMS AT THE NATIONAL AEROSPACE LABORATORY (NLR)

W. Loeve and H. A. T. Timmers Dec. 1979 25 p In DUTCH: ENGLISH summary Presented at Tech. Univ., Twente, Netherlands, 22 Nov. 1978

(NLR-MP-78038-U) Avail: NTIS HC A02/MF A01

Applied informatics combines knowledge from several scientific disciplines. It was shown how at the NLR, informatic systems were developed by multi-disciplinary project groups. Some points for discussion are given with respect to the skills which must be met by scientific engineers who form part of such a project group. The general discussion is illustrated by the description of an actual application. T.M.

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N81-16949# Midwest Research Inst., Golden, Colo.

A BROAD KNOWLEDGE OF INFORMATION TECHNOLOGIES: A PREREQUISITE FOR THE EFFECTIVE MANAGEMENT OF THE INTEGRATED INFORMATION SYSTEM

Herbert Landau Sep. 1980 9 p Presented at the 12th Ann. Meeting of the Western Canada Chapter of ASIS, Saskatchewan, 25 Sep. 1980

(Contract EG-77-C-01-4042)

(SERI/TP-750-926; CONF-800986-1)

Avail: NTIS

HC A02/MF A01

There is a trend towards the bringing together of various information technologies into integrated information systems. The managers of these total systems therefore must be familiar with each of the component technologies and how they may be combined into a total information system. To accomplish this, the manager should first define the overall system as an integrated flow of information with each step identified; then, the alternate technologies applicable to each step may be selected. Methods of becoming technologically aware are suggested and examples of integrated systems are discussed. Author

N81-17030# Department of Transportation, Washington, D. C. Office of Assistant Secretary for Systems Development and Technology.

FEDERAL RADIONAVIGATION PLAN. VOLUME 1: RADIONAVIGATION PLANS AND POLICY Final Report, Dec. 1979 - Jun. 1980

Jul. 1980 90 p Prepared in cooperation with DOD, Washington, D.C. 4 Vol.

(AD-A093774; DOT-TSC-RSPA-80-16-Vol-1;

DOD-4650.4-P-Vol-1) Avail: NTIS HC A05/MF A01 CSCL 17/7

The Federal Radionavigation Plan (FRP) has been jointly developed by the U.S. Departments of Defense and Transportation to ensure efficient use of resources and full protection of National interests. The plan sets forth the Federal interagency approach to the implementation and operation of radionavigation systems. The Federal Radionavigation Plan delineates policies and plans for Government-provided radionavigation services. The document describes respective areas of authority and responsibility, and provides a management structure by which the individual operating agencies will define requirements and meet them in a cost-effective manner. It replaces the DOT National Plan for Navigation, and those sections of the DOD Joint Chiefs of Staff (JCS) Master Navigation Plan dealing with common user systems. Volume 1 is a summary document which delineates plans, policies, and authority and responsibility for providing radionavigation services. An integrated management plan describing how DOT and DOD will determine requirements and coordinate research, development, and implementation of radionavigation systems is provided. GRA

N81-17031# Department of Transportation, Washington, D. C. Office of Assistant Secretary for Systems Development and Technology.

FEDERAL RADIONAVIGATION PLAN. VOLUME 2: REQUIREMENTS Final Report, Dec. 1979 - Jun. 1980

Jul. 1980 50 p Prepared in cooperation with DOD, Washington, D.C. 4 Vol.

(AD-A093775; DOT-TSC-RSPA-80-16-Vol-2;

DOD-4650.4-P-Vol-2) Avail: NTIS HC A03/MF A01 CSCL 17/7

The user requirements and the processes that were used to determine them are described. Both general and specific requirements related to various applications and phases of navigation are discussed. Present and future anticipated needs are also discussed. The requirements of civil and military users defined for radio navigational services are based upon the technical and operational performance needed for military missions, transportation safety, and economic efficiency. T.M.

N81-17032# Department of Transportation, Washington, D. C. Office of Assistant Secretary for Systems Development and Technology.

FEDERAL RADIONAVIGATION PLAN. VOLUME 3: RADIONAVIGATION SYSTEM CHARACTERISTICS Final Report, Dec. 1979 - Jun. 1980

Jul. 1980 46 p Prepared in cooperation with DOD, Washington, D.C. 4 Vol.

(AD-A093776; DOT-TSC-RSPA-80-16-Vol-3;

DOD-4650.4-P-Vol-3) Avail: NTIS HC A03/MF A01 CSCL

17/7

Present and planned navigation systems are described in terms of nine major parameters: signal characteristics, accuracy, availability, coverage, reliability, fix rate, fix dimensions, capacity, and ambiguity. The characteristics, capabilities, and limitations of existing and proposed major radio navigation systems are discussed. All of the systems considered are defined in terms of system performance parameters which determine the utilization and limitations of the individual systems. T.M.

N81-17033# Department of Transportation, Washington, D. C. Office of Assistant Secretary for Systems Development and Technology.

FEDERAL RADIONAVIGATION PLAN. VOLUME 4: RADIONAVIGATION RESEARCH, ENGINEERING AND DEVELOPMENT Final Report, Dec. 1979 - Jun. 1980

Jul. 1980 120 p Prepared in cooperation with DOD, Washington, D.C. 4 Vol.

(AD-A093777; DOT-TSC-RSPA-80-16-Vol-4;

DOD-4650.4-P-Vol-4) Avail: NTIS HC A06/MF A01 CSCL 17/7

The federal radio navigation R&E plan together with individual R&E plans for military and civil air, land, marine applications are summarized. Open issues and the means for their resolution are discussed. A key feature is a discussion on how the individual agency R&E plans will be coordinated to help assure that all aspects of each system are thoroughly evaluated while avoiding duplication of activities. T.M.

N81-17638# Research Triangle Inst., Research Triangle Park, N. C.

THE EMISSIONS INVENTORY SYSTEM/POINT SOURCE USER'S GUIDE

Larry R. McMaster May 1980 824 p refs

(Contract EPA-68-02-3011)

(PB81-114100; EPA-450/4-80-10)

Avail: NTIS

HC A99/MF A01 CSCL 09B

When dealing with atmospheric pollution, it is necessary to assess, catalog, sort, evaluate and perform calculations upon large volumes of data. The Emissions Inventory System/Point Source provides air pollution control agencies with the capability to create and maintain their own data bases of point source data and to retrieve data and generate reports from those data bases. Step procedures for the operation of each program in the system are given. Each program has sections containing a description, file formats, options, error messages, catalogues JCL (IBM), warnings and special instruction, cost considerations, and related programs and procedures. GRA

N81-17744# Army Construction Engineering Research Lab., Champaign, Ill.

AUTOMATED DOCUMENTATION SYSTEM (ADS) STUB GENERATOR: DESCRIPTION AND USER INSTRUCTIONS Final Report

Linda Lawrie and Jean Baugh Oct. 1980 40 p refs

(AD-A093153; CERL-TR-E-167)

Avail: NTIS

HC A03/MF A01 CSCL 09/2

This report describes a subsystem of the Automated Documentation System (ADS) called the Stub Generator. The Stub Generator lets software development managers define which ADS documentation sections must be in the final software code. It also lets the manager monitor updated ADS documentation as initial software codes are amended and extended. The programmer is given a convenient way of developing a system in a top-down structural manner through the generation of standard program stubs. GRA

N81-17941# Army Military Personnel Center, Alexandria, Va. **FACTORS IN MANAGEMENT INFORMATION SYSTEM FAILURES. M.S. Thesis. Final Report**

Eldor Wynn Garrison 8 Dec. 1980 91 p refs

(AD-A093102) Avail: NTIS HC A05/MF A01 CSCL 05/2

This report surveys current literature (1970 - 1980) on factors that can adversely affect the successful completion and execution of a management information system project. Several areas are examined, including: (1) technology, (2) the human resource, (3) monetary allocations, and (4) the development of knowledge during the project life cycle. Some of the problems that exist are: (1) mismanagement of technology and failing to understand its role in MIS, (2) inadequate verbal and written

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communication skills, (3) insufficient support and involvement on the part of top management, (4) failure to have a definitive approach to project development, (5) inadequate documentation of requirements and specifications, (6) improper use of personnel, (7) instability to quantify intangible costs and benefits, (8) inadequate documentation of planning and development stages, and (9) a scarcity of empirical research for validating the perceived causes of failure in MIS projects. The Management Integrated Model Information, Capital and Control System (MIMIC2S) is presented as an example of the type model needed for successful development and execution of any project to include a MIS. GRA

N81-18221*# BDM Corp., Huntsville, Ala.
COAL GASIFICATION SYSTEMS ENGINEERING AND ANALYSIS. APPENDIX H: WORK BREAKDOWN STRUCTURE Final Report
31 Dec. 1980 142 p 10 Vol.
(Contract NAS8-33824)
(NASA-CR-161662; BDM/H-80-800-TR-App-H) Avail: NTIS HC A17/MF A01 CSCL 21D

A work breakdown structure (WBS) is presented which encompasses the multiple facets (hardware, software, services, and other tasks) of the coal gasification program. The WBS is shown to provide the basis for the following: management and control; cost estimating; budgeting and reporting; scheduling activities; organizational structuring; specification tree generation; weight allocation and control; procurement and contracting activities; and serves as a tool for program evaluation. R.C.T.

N81-18304# Naval Sea Systems Command, Washington, D. C.
CONTRACTING AND MANAGEMENT GUIDE FOR SNEAK CIRCUIT ANALYSIS (SCA)
Sep. 1980 58 p refs
(AD-A094541; NAVSEA-TE001-AA-GYD-010/SCA) Avail: NTIS HC A04/MF A01 CSCL 05/1

This guide presents a description of the Sneak Circuit Analysis (SCA) with primary emphasis on its purpose and potential benefits, as well as cost factors and trade-offs. It is not the intent of the guide to define the exact methods or techniques for the performance of the analysis. The following topics relating to the SCA are addressed: What is a Sneak Circuit Analysis? Why would the SCA be performed? Who performs/participates in the SCA? When should the SCA be performed? How is the SCA ordered and managed? What are the associated cost factors? GRA

N81-18927# Syracuse Univ., N. Y. School of Citizenship and Public Affairs.
PUBLIC MANAGERS AND SCIENTIFIC AND TECHNICAL INFORMATION
Barry Bozeman and Elliot Cole Sep. 1980 23 p refs
(Contract N00014-76-C-0912)
(AD-A093136; TR-7) Avail: NTIS HC A02/MF A01 CSCL 05/2

Despite a tremendous influx of information into public agencies and a concern with information processing models of organizations, there is a special variety of information that is often poorly utilized or under utilized -- scientific and technical information (STI). This study of public managers: orientations toward STI, a study based on data gathered from questionnaires mailed to officials of the Canadian government's Environmental Protection Service, seeks to better understand patterns of STI acquisition and sharing and information channel preferences among users of STI. It was hypothesized that three clusters of variables would have predictive value in respect to channel preference and 'gatekeeping': Job Perceptions, Administrative Role, Professionalism. The chief findings can be summarized as follows: (1) Preference for formal channels is associated with a low opinion of co-workers, increased age (independent of administrative responsibility) and high perceived utility for STI; (2) Preference for informal channels outside the organization is associated with membership in professional organizations; (3) Gatekeeping is associated with a low opinion of co-workers, doctoral level degree, high attendance at professional meetings, and specialization. The implications of the findings for designing scientific and technical information systems are discussed. GRA

N81-20164*# National Aeronautics and Space Administration, Washington, D. C. Headquarters Administration Div.

SPACE SHUTTLE PROGRAM. MISSION OPERATION REPORT. ORBITAL FLIGHT TEST REFERENCE DOCUMENT

2 Mar. 1981 231 p
(NASA-TM-82321; M-989-81) Avail: NTIS HC A11/MF A01 CSCL 22B

A typical Orbital Flight Test flight profile is presented. Detailed descriptions of space shuttle flight vehicles, systems, facilities, mission support, and mission management are included. T.M.

N81-20293# Computer Sciences Corp., Washington, D.C.
OFFICE OF ALCOHOL FUELS PROGRAM PLAN, FY 1981
Oct. 1980 122 p
(Contract DE-AC01-79CR-10001)
(DOE/AF-10001/T2) Avail: NTIS HC A06/MF A01

The goal of the Office of Alcohol Fuels is to promote the production, distribution, and use of alcohol fuels. The program objectives are defined and the strategy for implementation is described. An organizational model of the operation is included. The roles of the 3 program offices and various field offices are described. DOE

N81-20304# Rockwell International Corp., Canoga Park, Calif. Energy Systems Group.

COAL HYDROGASIFICATION PROCESS DEVELOPMENT Quarterly Technical Progress Report, 1 Oct. - 31 Dec. 1980
L. P. Combs, L. S. Breese, D. R. Kahn, M. D. Schuman, C. W. Adamson, and W. T. Lee Jan. 1981 41 p refs
(Contracts DE-AC01-78ET-10328; ET-78-C-01-3125)
(DOE/ET-10328/27) Avail: NTIS HC A03/MF A01

A program schedule delineating the breakdown of the overall program into tasks and logical subtasks and time-phased relationships among them is shown. The major tasks are summarized. Task I is concerned with the engineering-scale testing. Task II is concerned with design, construction, and testing. Task III provides for process optimization studies and for preliminary design of a commercial plant. DOE

N81-20948# Messerschmidt-Boelkow G.m.b.H., Munich (West Germany).
MANAGEMENT ADVANTAGES OF THE STANDARD WORK BREAKDOWN STRUCTURE PROPOSED BY THE EUROPEAN SPACE AGENCY FOR SPACE SATELLITE PROJECTS M.A. Thesis - Pacific States Univ.
Bernd-Joachim Madauss 17 Jul. 1980 126 p refs
Avail: NTIS HC A07/MF A01

The advantages and disadvantages of a selected work breakdown structure (WBS) configuration were tested on the basis of realistic conditions then compared with two other concepts based on an evaluation of 44 WBS concepts. Each WBS configuration was rated on six management effectiveness criteria (MEC) which represented all the known and applied fields of modern project management methodology. The six MEC sub-questions established were further broken down into 58 detailed questions as a basis on which the test actually was performed. Author (ESA)

N81-20970*# National Aeronautics and Space Administration, Washington, D. C.
NASA GETS UNDER WAY
In its Beyond the Atmosphere: Early Years of Space Sci. 1980 p 100-115
Avail: NTIS MF A01; SOD HC \$11.00 CSCL 05A

The organization, staffing, and project management of NASA was reviewed. Early projects included: sounding rocket research; explorer-class satellites; geodetic satellites; weather satellites; and communication satellites. The first recorded direct obligations to space science or related projects are presented. T.M.

N81-20974*# National Aeronautics and Space Administration, Washington, D. C.
WHO DECIDES?
In its Beyond the Atmosphere: Early Years of Space Sci. 1980 p 203-222
Avail: NTIS MF A01; SOD HC \$11.00 CSCL 05D

A historical overview is given of the relations between NASA and the scientific community as regards the responsibility of formulating the directions of space science projects. The role of

the National Academy of Sciences and the development of the Space Science Board and the creation of NASA in-house advisory boards are discussed. M.G.

N81-20976*# National Aeronautics and Space Administration, Washington, D. C.

PROGRAMS, PROJECTS, AND HEADACHES

In its Beyond the Atmosphere: Early Years of Space Sci. 1980 p 243-257

Avail: NTIS MF A01; SOD HC \$11.00 CSCL 05A

The role of the individual NASA space centers in the space science program is examined. The relationship between the space centers and the NASA headquarters is discussed. M.G.

N81-20977*# National Aeronautics and Space Administration, Washington, D. C.

JET PROPULSION LABORATORY: OUTSIDER OR INSIDER?

In its Beyond the Atmosphere: Early Years of Space Sci. 1980 p 258-273

Avail: NTIS MF A01; SOD HC \$11.00 CSCL 05A

The working relationship between NASA and the Jet Propulsion Laboratory is examined in a historical context. The problems which developed due to the facility's close university association are addressed. M.G.

N81-20979*# National Aeronautics and Space Administration, Washington, D. C.

LEADERSHIP AND CHANGING TIMES

In its Beyond the Atmosphere: Early Years of Space Sci. 1980 p 283-295

Avail: NTIS MF A01; SOD HC \$11.00 CSCL 05A

The role of NASA's administrators in the development of a wide-ranging program of Earth and space sciences is examined. Emphasis is placed on the manned space flight projects. M.G.

N81-20981*# National Aeronautics and Space Administration, Washington, D. C.

SPACE SCIENCE AND PRACTICAL APPLICATIONS

In its Beyond the Atmosphere: Early Years of Space Sci. 1980 p 319-326

Avail: NTIS MF A01; SOD HC \$11.00 CSCL 05B

The interrelationships between space science research, practical applications, and funding are investigated in a historical context. M.G.

N81-20983*# National Aeronautics and Space Administration, Washington, D. C.

OBJECTIVES, PLANS, AND BUDGETS

In its Beyond the Atmosphere: Early Years of Space Sci. 1980 p 373-392

Avail: NTIS MF A01; SOD HC \$11.00 CSCL 05A

Government support of NASA is examined in a historical context, and the management strategies employed to meet the basic NASA objectives are discussed. M.G.

N81-20984*# National Aeronautics and Space Administration, Washington, D. C.

REVIEW AND ASSESSMENT

In its Beyond the Atmosphere: Early Years of Space Sci. 1980 p 393-411

Avail: NTIS MF A01; SOD HC \$11.00 CSCL 05A

The development of the NASA space program is reviewed. Organization and management, individual and institutional relations, and the advancements in space science are addressed. M.G.

N81-21947# Sandia Labs., Albuquerque, N. Mex. Energy Research and Development.

NETWORK ANALYSIS PLANNING FOR PROJECT MANAGEMENT: A PRIMER

Marvin J. Beckett Jan. 1981 33 p refs

(Contract DE-AC04-76DP-00789)

(SAND-80-1654) Avail: NTIS HC A03/MF A01

A step-by-step description of a methodology for planning a project using techniques of network analysis is reviewed. The methods are compatible with most available computer planning

programs. Simple workshop problems and solutions are included. S.F.

N81-21950*# National Aeronautics and Space Administration, Langley Research Center, Hampton, Va.

A REVIEW AND EVALUATION OF THE LANGLEY RESEARCH CENTER'S SCIENTIFIC AND TECHNICAL INFORMATION PROGRAM. RESULTS OF PHASE 5. DESIGN AND EVALUATION OF STI SYSTEMS: A SELECTED, ANNOTATED BIBLIOGRAPHY

Thomas E. Pinelli, Patricia A. Hinnebusch (Old Dominion Univ.), and Jack M. Jaffe Feb. 1981 78 p

(NASA-TM-81954) Avail: NTIS HC A05/MF A01 CSCL 05B

A selected, annotated bibliography of literature citations related to the design and evaluation of STI systems is presented. The use of manual and machine-readable literature searches; the review of numerous books, periodicals reports, and papers; and the selection and annotation of literature citations were required. The bibliography was produced because the information was needed to develop the methodology for the review and evaluation project, and a survey of the literature did not reveal the existence of a single published source of information pertinent to the subject. Approximately 200 citations are classified in four subject areas. The areas include information - general; information systems - design and evaluation, including information products and services; information - use and need; and information - economics. A.R.H.

N81-22085*# National Aeronautics and Space Administration, Marshall Space Flight Center, Huntsville, Ala.

MATERIALS PROCESSING IN SPACE (MPS) PROGRAM DESCRIPTION

Apr. 1981 85 p refs

(NASA-TM-82410) Avail: NTIS HC A05/MF A01 CSCL 22A

Insight is provided into the scientific rationale for materials processing in space (MPS), and a comprehensive and cohesive approach for implementation and integration of the many, diverse aspects of MPS is described. The programmatic and management functions apply to all projects and activities implemented under MPS. It is intended that specific project plans, providing project unique details, will be appended to this document for endeavors such as the Space Processing Applications Rocket (SPAR) Project, the Materials Experiment Assembly (MEA) Project, the MPS/Spacelab (MPS/SL) Project, and the Materials Experiment Carrier (MEC) Payloads. S.F.

N81-22977# Virginia Univ., Charlottesville. Dept. of Engineering Science and Systems.

METHODOLOGICAL CONSIDERATIONS IN THE DESIGN OF LARGE SCALE SYSTEMS ENGINEERING PROCESSES

Andrew P. Sage 1 Feb. 1981 75 p refs

(Contract N00014-80-C-0542; NR Proj. 197-065)

(AD-A096872; UVA/SE-81-4) Avail: NTIS HC A04/MF A01 CSCL 12/2

This paper discusses some methodological considerations in the design of large scale systems engineering processes. We begin our effort by providing several definitions of system engineering. There are a number of impediments to the resolution of large scale issues in the public and private sectors and it is important that designers of appropriate and useful systems be aware of these. Following a discussion of these impediments, we present a structure describing the systems engineering process. This is used to motivate discussion of the functional considerations involved in a systemic process: systems science and operations research, systems methodology and design, and systems management. A brief discussion of methods for formulation, analysis an interpretation is followed by a discussion of systems management and the associated use of human judgement for the design of systemic processes. We believe the contingency task structure of systems management to be an especially useful guideline for the design of information systems for planning and decision support. We give a number of reasons supporting this belief and present a model for information aquisition and information evaluation based on our contingency task structure. A discussion of systems engineering in the political process and implications for professional practice is followed by delineation of the many potential benefits of the systems process. GRA

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N81-23103# Centre National d'Etudes Spatiales, Toulouse (France).

THE SYMPHONIE PROGRAM: OBJECTIVES, OPERATIONS AND TECHNICAL OPERATIONS OF THE PROJECT [LE PROGRAMME SYMPHONIE: OBJECTIFS, DEROULEMENT ET ORGANISATION DU PROJET TECHNIQUE]

J. Muller *In its* Symphonie Symp. 1980 p 35-41 In FRENCH; ENGLISH summary Original contains color illustrations

(Proj. Symphonie)

Avail: NTIS HC A99/MF A01

The original aims of the French and German governments as revealed by the terms of the 1967 agreement and the procedure adopted for setting up the Symphonie industrial organization are shown. Decisions taken regarding system specifications are discussed. The operating principles adopted at the governmental, industrial, and project organization levels are analyzed showing how it is possible to ensure the equitable sharing of the responsibilities and industrial workloads at all times and how difficulties encountered in the course of a program can be efficiently resolved through joint action. Author (ESA)

N81-23146# Deutsche Forschungs- und Versuchsanstalt fuer Luft- und Raumfahrt, Oberpfaffenhofen (West Germany). German Space Operations Center.

ORGANIZATION AND OPERATIONAL CONFIGURATION OF THE SYMPHONIE GROUND CONTROL SYSTEM

B. Ebel and G. Cales (CNES, Toulouse) *In* CNES Symphonie Symp. 1980 p 615-632

Avail: NTIS HC A99/MF A01

The organization of Symphonie mission operations, particularly, control operations for the two orbiting spacecraft, is presented. Both satellites are the common responsibility of the German and French space agencies. The characteristic features of the two control centers (SYNCON located near Munich and COSY located at the Toulouse Space Center) are given with respect to antennas, communication links, computers, and the software developed for quick look at housekeeping data, attitude/orbit determination and control as well as for off-line spacecraft performance analysis. Results obtained are used to emphasize the effectiveness of bilateral project coordination. Author (ESA)

N81-23150# Centre National d'Etudes Spatiales, Toulouse (France).

SUMMARY OF OPERATING EXPERIENCE WITH THE SYMPHONIE SATELLITES

G. Cales, J.-J. Dechezelles (SNIAS, Cannes, France), and B. Ebel (DFVLR, Oberpfaffenhofen, West Germany) *In its* Symphonie Symp. 1980 p 733-742 Partly in ENGLISH and FRENCH

Avail: NTIS HC A99/MF A01

Experience gained by the French and German ground control centers during Symphonie in orbit operations is summarized. The particularities of ground control of geostationary telecommunications satellites are reviewed. An analysis of the workload associated directly with the design of the Symphonie spacecraft and ground operations systems is then presented. Special attention is given to flexibility in spacecraft design with regard to backup modes and the use of redundancy. Identification of spacecraft design features that result in inadequate workloads on the ground is discussed in terms of ease of analysis of degraded operation and anomalies as well as regarding protection against ground control handling errors. Improvements that could be introduced into the design of future spacecraft and ground operation systems are suggested. Author (ESA)

N81-23938# Arinc Research Corp., Annapolis, Md.

THE AIR FORCE NONDESTRUCTIVE INSPECTION MANAGEMENT INFORMATION SYSTEM DEVELOPMENT PROGRAM. PHASE 2: PRELIMINARY DESIGN AND APPROVAL. TASK 1: NDI MAINTENANCE DATA ANALYSIS Interim Report

David E. Franck Mar. 1981 36 p

(Contract F41608-79-D-A014)

(AD-A097669; Rept-2214-21-TR-2409; SA-ALC-MM-006861)

Avail: NTIS HC A03/MF A01 CSCL 05/1

This report summarizes the Task 1 activities of ARINC Research Corporation in support of Phase 2 of the Air Force

Nondestructive Inspection (NDI) Program Office (MMEI) at the San Antonio Air Logistics Center (SAALC), Kelly Air Force Base, Texas. These activities, performed as part of Contract F41608-79-D-A014-0004, included an assessment of NDI maintenance data available via the AFM 66-1 Maintenance Data Collection System (MDCS). The objective of these efforts was to determine the magnitude of NDI maintenance in terms of man-hours expended, the manner in which NDI maintenance is documented, and the number of bases reporting NDI to the MDCS. GRA

N81-23939# Arinc Research Corp., Annapolis, Md.

THE AIR FORCE NONDESTRUCTIVE INSPECTION MANAGEMENT INFORMATION SYSTEM DEVELOPMENT PROGRAM. PHASE 2: PRELIMINARY DESIGN AND APPROVAL TASK 2: ON-SITE DATA COLLECTION Interim Report

David E. Franck and Robert Barrar Mar. 1981 40 p

(Contract F41698-79-D-A014)

(AD-A097670; Rept-2214-22-TR-2410; SA-ALC-MM-006862)

Avail: NTIS HC A03/MF A01 CSCL 05/1

This report summarizes the Task 2 activities of ARINC Research Corporation in support of Phase 2 of the Air Force Nondestructive Inspection (NDI) Program Office (MMEI) at the San Antonio Air Logistics Center (SAALC), Kelly Air Force Base, Texas. These activities, performed as part of Contract F41608-79-D-A014-0004, included field collection of NDI maintenance data to assess their applicability to a proposed NDI Management Information System. The objective of this task was to monitor NDI maintenance at three selected air bases and document the NDI activities by use of both the current Air Force NDI documentation procedures and NDI maintenance codes proposed in ARINC Research publication 1555-11-1-2068. GRA

N81-23945# Battelle Columbus Labs., Ohio.

MECHANICAL PROPERTIES DATA CENTER Annual Report, 1 Jan. - 31 Dec. 1980

Harold Mindlin, Harold Hueck, and Ross Gubiotti Mar. 1981 70 p

(Contract DLA900-79-C-0539)

(AD-A097389; AMMRC-TR-81-16)

Avail: NTIS

HC A04/MF A01 CSCL 05/2

This report summarizes MPDC activities for the period 1 January 1980 through 31 December 1980, a total of 12 months, under Contract DLA900-79-C-0539. It provides a summary of the scope, objectives, and organization of MPDC, its information processing products, and services, and a discussion of management objectives. The report focuses on the conversion of the mechanical properties data base to the Battelle data base management system and the continuation of the products and services of the Center. Author (GRA)

N81-24152*# National Aeronautics and Space Administration, Washington, D. C.

MISSION OPERATION REPORT: OFFICE OF SPACE AND TERRESTRIAL APPLICATIONS

3 Jun. 1981 24 p

(E-615-81-03; NASA-TM-82355)

Avail: NTIS

HC A02/MF A01 CSCL 22A

The NOAA-C is the third NOAA-funded operational spacecraft of the TIROS-N series. A description of the mission is presented along with the NASA mission objectives for NOAA-C. Descriptions are also given of the spacecraft configuration and launch vehicle. The mission ground support systems were reviewed and the mission management responsibilities are summarized. T.M.

N81-24551# Wilson-Hill Associates, Inc., Washington, D.C. **BENCHMARK REQUIREMENTS FOR THE ENERGY EMERGENCY MANAGEMENT INFORMATION SYSTEM (EEMIS). PHASE 1: WORK PLAN**

22 Sep. 1980 17 p

(Contract DE-AC01-80EI-11581)

(DOE/EIA-11581/T3) Avail: NTIS HC A02/MF A01

The energy emergency management information system (EEMIS) has responsibility for providing special information and communication services to government officials at Federal and state levels, who must deal with energy emergencies. Because of proprietary information residing in the data base used for federal purposes, a special system (EEMIS-S) must be established for use by the states. It is planned to acquire teleprocessing

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services for EEMIS-S from a time-sharing commercial vendor, and the process for procurement must meet guidelines for approval. The work plan and schedule for meeting these guidelines are discussed. Tasks to be included contain estimates of time, cost, and resources required, all of which are briefly described.

DOE

N81-24813# National Aerospace Lab., Amsterdam (Netherlands). **PRACTICAL CONSIDERATIONS ABOUT THE RELATIONSHIP BETWEEN APPLIED MATHEMATICS AND INFORMATION SCIENCE**

W. Loeve 12 Feb. 1980 22 p refs In DUTCH; ENGLISH summary Presented at Math. Inst., Groningen, Netherlands, 12 Feb. 1980

(NLR-MP-80007-U) Avail: NTIS HC A02/MF A01

Computer modelling as an aspect of applied mathematics is discussed. The integration of this type of research with research on information systems is examined, with implications for the applied mathematician. Author (ESA)

N81-24987# Science Applications, Inc., Englewood, Colo. **BETC INFORMATION MANAGEMENT SYSTEM WITH FOCUS ON ROS ESTIMATION Final Report**

J. K. Willoughby, J. A. Gardner, S. B. Heath, and M. A. Kehler Nov. 1980 106 p refs

(Contract DE-AC19-79BC-10032)

(DOE/BC-10032/24) Avail: NTIS HC A06/MF A01

A special purpose information data base system was signed for the Bartlesville Energy Technology Center (BETC) to support the technical staff in the areas of Enhanced Oil Recovery (EOR) and Residual Oil Saturation Estimation (ROS). The analysis of usage patterns revealed that four basic data types were required most often by potential system users. These were: (1) numeric files; (2) bibliographic citations and abstracts; (3) project information such as schedules and budgets; and (4) references to persons that were authorities in various relevant topical areas. The need for a unique subject taxonomy and for four different data types resulted in the design of a system that permits the retrieval of information by searching the subject taxonomy, selecting a subject term, or terms, and determining the appropriate data types in one step searching. DOE

N81-25120*# National Aeronautics and Space Administration, Washington, D. C.

IMPROVED NOAA SATELLITE SCHEDULED FOR LAUNCH

William J. Brennan (NOAA, Rockville, Md.), Dick McCormack, and Ken Senstad 12 Jun. 1981 19 p

(NASA-News-Release-81-76; PB1-10077) Avail: NASA Scientific and Technical Information Facility, P.O. Box 8757, B.W.I. Airport, Md. 21240 CSCL 22A

A description of the NOAA-C satellite and its Atlas launch vehicle are presented. The satellite instrumentation and data transmission systems are discussed. A flight sequence of events is given along with a listing of the mission management responsibilities. T.M.

N81-25861*# National Aeronautics and Space Administration, Marshall Space Flight Center, Huntsville, Ala.

PROJECT RESOURCE REALLOCATION ALGORITHM

J. E. Myers May 1981 52 p

(NASA-TM-82419) Avail: NTIS HC A04/MF A01 CSCL 05A

A methodology for adjusting baseline cost estimates according to project schedule changes is described. An algorithm which performs a linear expansion or contraction of the baseline project resource distribution in proportion to the project schedule expansion or contraction is presented. Input to the algorithm consists of the deck of cards (PACE input data) prepared for the baseline project schedule as well as a specification of the nature of the baseline schedule change. Output of the algorithm is a new deck of cards with all work breakdown structure block and element of cost estimates redistributed for the new project schedule. This new deck can be processed through PACE to produce a detailed cost estimate for the new schedule. J.D.H.

N81-25865# RAND Corp., Santa Monica, Calif.

AI FOR SYSTEMS MANAGEMENT

Frederick Hayes-Roth Jan. 1981 35 p refs

(RAND/P-6573) Avail: NTIS HC A03/MF A01

Complex systems require intelligent control strategies, and artificial intelligence (AI) concepts and tools contribute to the management of such systems. Several AI approaches to systems management problem are studied, including: 1 a model of the system to be managed; 2 a situation assessment function that employs the model to interpret sensor data; and 3 a planning and control function that employs the model to select desired actions. This broad approach generalizes many of the recent advanced AI applications and defines a substantial research and development program. Improving the technologies for modeling and simulation is discussed, as well as systematizing and improving situation assessment methods, and expanding a repertoire of planning strategies and tools. S.F.

N81-25880# Eltra Corp., Plymouth Meeting, Pa. C and D Batteries Div.

RESEARCH, DEVELOPMENT, AND DEMONSTRATION OF LEAD-ACID BATTERIES FOR ELECTRIC VEHICLE PROPULSION Annual Report

G. W. Bodamer, G. C. Branca, H. R. Cash, G. L. Davis, and E. M. Yurick Mar. 1981 75 p refs 2 Vol.

(Contract W-31-109-eng-38)

(ANL/OEPM-80-10) Avail: NTIS HC A05/MF A01

The progress and status of Eltra's Electric Vehicle Battery Program during FY-80 are presented under five divisional headings: Research on Components and Processes; Development of Cells and Modules for Electric Vehicle Propulsion; Sub-Systems; Pilot Line Production of Electric Vehicle Battery Prototypes; and Program Management. DOE

N81-26467*# National Aeronautics and Space Administration, Ames Research Center, Moffett Field, Calif.

LOGIC ANALYSIS OF COMPLEX SYSTEMS BY CHARACTERIZING FAILURE PHENOMENA TO ACHIEVE DIAGNOSIS AND FAULT-ISOLATION

James T. Wong and William L. Andre Apr. 1981 22 p refs Presented at the Joint Intern. Meeting of CORS and ORSA, Toronto, 3-6 May 1981 Prepared in cooperation with Army Research and Technology Labs., Moffett Field, Calif.

(NASA-TM-81291; USAAVRADCOM-TR-81-A-12; A-8561)

Avail: NTIS HC A02/MF A01 CSCL 14D

A recent result shows that, for a certain class of systems, the interdependency among the elements of such a system together with the elements constitutes a mathematical structure a partially ordered set. It is called a loop free logic model of the system. On the basis of an intrinsic property of the mathematical structure, a characterization of system component failure in terms of maximal subsets of bad test signals of the system was obtained. Also, as a consequence, information concerning the total number of failure components in the system was deduced. Detailed examples are given to show how to restructure real systems containing loops into loop free models for which the result is applicable. Author

N81-26978# Minnesota State Planning Agency, St. Paul. **IMPROVING SCIENTIFIC AND TECHNICAL RESOURCES UTILIZATION Final Report**

1980 32 p

(Grant NSF ISP-78-04615)

(PB81-158909; NSF/RA-800364) Avail: NTIS HC A03/MF A01 CSCL 05A

The question of how to improve the Executive Branch's utilization of scientific and engineering personnel and resources within the context of a case study of a particular problem solving effort was analyzed. A major task involving extensive scientific and engineering components was selected: the Special Study on Hazardous and Solid Waste, authorized by Minnesota's 1978 Legislature. In addition to the case study, efforts were made to identify existing efforts or arrangements employed by any state agency or department of the Executive Branch to improve its use of scientific or engineering knowledge. This task was accomplished through interviews with major department and agency heads by the project management. GRA

N81-27150*# National Aeronautics and Space Administration, Marshall Space Flight Center, Huntsville, Ala.

SURVEY OF THE US MATERIALS PROCESSING AND MANUFACTURING IN SPACE PROGRAM

E. C. McKannan Jul. 1981 71 p

02 PROJECT OR SYSTEMS MANAGEMENT

(NASA-TM-82427) Avail: NTIS HC A04/MF A01 CSDL 22A

To promote potential commercial applications of low-technology, the materials processing and manufacturing in space program is structured to: (1) analyze the scientific principles of gravitational effects on processes used in producing materials; (2) apply the research toward the technology used to control production process (on Earth or in space, as appropriate); and (3) establish the legal and managerial framework for commercial ventures. Presently federally funded NASA research is described as well as agreements for privately funded commercial activity, and a proposed academic participation process. The future scope of the program and related capabilities using ground based facilities, aircraft, sounding rockets, and space shuttles are discussed. Areas of interest described include crystal growth; solidification of metals and alloys; containerless processing; fluids and chemical processes (including biological separation processes); and processing extraterrestrial materials. A.R.H.

N81-27474* Naval Electronic Systems Command, Washington, D. C.

A U.S. NAVY PRECISE TIME AND TIME INTERVAL (PTTI) PROGRAM UPDATE

Ralph T. Allen In NASA. Goddard Space Flight Center Proc. of the 12th Ann. Precise Time and Time Interval Appl. and Planning Meeting Mar. 1981 p 127-140 refs

Avail: NTIS HC A99/MF A01 CSDL 20E

The review presents a brief history of the program, its management organization, and current and projected requirements, capabilities and program efforts. The overall program growth since September 1975 is presented. The Navy's areas of concern regarding future PTTI development are described. T.M.

N81-27969# Recheninstitut fuer das Bauwesen, Stuttgart (West Germany).

USE OF COMPUTERS FOR THE DOCUMENTATION OF SUPPLY LINES Final Report

Walter Leibbrand, Thomas Koehler, and Georg Heidinge Bonn Bundesministerium fuer Forschung und Technologie Aug. 1980 424 p refs In GERMAN; ENGLISH summary Sponsored by Bundesministerium fuer Forschung und Technologie Prepared in cooperation with IKO Software Service GmbH (BMFT-FB-DV-80-007; ISSN-0170-9011; BMFT-0815073/DV0792) Avail: NTIS HC A18/MF A01

The application of computer systems for the management of gas, water and/or electricity distribution is studied. Examples of existing uses, such as the implementation of computer graphics to compile and update utility users maps, are cited. The establishment of data bases for the administration of network data is explained. Qualified statements are made on the criteria that must be taken into account by a utility company when introducing computers into their operation. Hardware and software problems are emphasized along with organizational aspects. Author (ESA)

N81-27983# California Univ., Livermore. Lawrence Livermore Lab.

PRIVATE SECTOR TECHNOLOGY TRANSFER Final Report

Jan. 1981 11 p refs (Contract W-7405-eng-48) (UCRL-15342) Avail: NTIS HC A02/MF A01

A service which could represent the private sector in the federal laboratory consortium technology transfer process is described. Particular emphasis is placed on the value of the technology transfer and utilization to the private sector and small business community. DOE

N81-28114# Erno Raumfahrttechnik G.m.b.H., Bremen (West Germany).

SPACELAB PROGRAM: SYSTEM ENGINEERING, MANAGEMENT AND STATUS [SPACELAB PROGRAMM-SYSTEMTECHNIK-MANAGEMENT UND STATUS]

Ants Kutzer 1980 56 p refs In GERMAN Presented at 29th Raumfahrtkongr. der Hermann-Oberth-Ges. e.V., Feucht, West Germany. 25-29 Jun. 1980

(ERNO-309) Avail: NTIS HC A04/MF A01

Systems design and construction as part of the Spacelab program are described. Systems development management which uses

modular configurations to optimize for Spacelab system reliability, versatility and reusability is assessed. Technological development in spaceflight principals and methods are reviewed, covering the 60's in the U.S. along with the later impact of NASA projects on European space programs. The results obtained from spaceflight certification and checkout investigations on the Spacelab system are presented. The interface between a complex control system and system elements is explained. Project management experience in system management techniques provides a methodological model useful in planning and implementing future spaceborne systems. Author (ESA)

N81-28135* National Aeronautics and Space Administration, Washington, D. C.

THE SHUTTLE ERA

[1981] 8 p

(NASA-TM-80455; NASA-Facts-127/3-81) Avail: NTIS HC A02/MF A01 CSDL 22B

An overview of the Space Shuttle Program is presented. The missions of the space shuttle orbiters, the boosters and main engine, and experimental equipment are described. Crew and passenger accommodations are discussed as well as the shuttle management teams. T.M.

N81-29164* National Aeronautics and Space Administration, Washington, D. C.

STAGES TO SATURN: A TECHNOLOGICAL HISTORY OF THE APOLLO/SATURN LAUNCH VEHICLES

Roger E. Bilstein 1981 508 p refs

(NASA-SP-4206) Avail: NTIS HC A22/MF A01 CSDL 22B

The origins of the Saturn 1 launch vehicle as a test bed and the development of the uprated Saturn B as an interim booster for the orbital testing of the first Apollo capsules are reviewed in this narrative account of technological advances responsible for the AS-506 launch vehicle and the success of the Apollo 11 flight. The evolution of the engine, including the development of high energy liquid hydrogen engines and of insulation for extended storage of cryogenic propellants in vehicle tanks are described as well as advances in computer technology for the guidance and control systems. Problems encountered in scaling components and systems for lunar missions are explored as well as political and administrative aspects of the Apollo-Saturn project. A.R.H.

N81-29304# Dynamic Science, Inc., Downey, Calif.

NATIONAL CRASHWORTHINESS SEVERITY STUDY Final Report, 16 Jul. 1976 - 30 Jun. 1980

Jack D. Baird and William Tipton Sep. 1980 135 p

(Contract DOT-HS-6-01388)

(PB81-175523; DSI-NCSS-1; DOT-HS-805718) Avail: NTIS HC A07/MF A01 CSDL 13L

The scope and organization of the automobile crashworthiness study are described, cooperating public agencies and their responsibilities listed, and modifications to the original planned survey described. Forms used for the data collection are presented. J.D.H.

N81-29656# Council on Environmental Quality, Washington, D.C.

ENVIRONMENTAL IMPACT STATEMENT EVALUATION CRITERIA

In its Biol. Evaluation of Environ Impacts Jun. 1981 p 202-204

Avail: NTIS HC A11/MF A01

The need for an environmental impact statement is defined by the following factors, considered singly and in combination: (1) type of project; (2) physical size of project; (3) relative magnitude of project; (4) project expense; (5) specific impacts on natural environment (including biological impact, cumulative biological impact, air quality impact, water quality impact, noise impact, esthetics, scenic and recreational values); (6) irreversible commitment of resources; (7) loss or gain of threatened wetland resources; and (8) economic and social impacts (including economic parameters). S.F.

N81-29658# Oak Ridge National Lab., Tenn. Environmental Sciences Div.

THE NATIONAL BIOLOGICAL MONITORING INVENTORY: A POTENTIAL AID TO PLANNING ENVIRONMENTAL

IMPACT STATEMENTS

Homer T. Kemp and Robert L. Burgess /n Council of Environmental Quality Biol. Evaluation of Environ. Impacts Jun. 1980 p 217-229 refs Sponsored by Presidents' Council on Environmental Quality, Fish and Wildlife Service and Marine Fisheries Service

(Publ-907) Avail: NTIS HC A11/MF A01

The National Inventory of Selected Biological Monitoring Programs is described and presented as a source of information for those involved in planning and conducting environmental impact studies. S.F.

N81-30030# TRW Defense and Space Systems Group, Huntsville, Ala. Software Engineering Group.

APPLICABILITY OF SREM TO THE VERIFICATION OF MANAGEMENT INFORMATION SYSTEM SOFTWARE REQUIREMENTS, VOLUME 1 Final Report

R. P. Loshbough, M. W. Alford, J. T. Lawson, D. M. Sims, T. R. Johnson, T. W. Thomas, and B. B. Bird, ed. 30 Apr. 1981 203 p refs 2 Vol.

(Contract DAHC26-80-C-0020)

(AD-A100720; TRW-37554-6950-001-Vol-1) Avail: NTIS HC A10/MF A01 CSCL 09/2

This document concerns TRW's demonstration of the application of the Software Requirements Engineering Methodology (SREM) to an existing Government Detailed Functional System Requirements (DFSR). The objective of this effort was to demonstrate the power of SREM as a tool to verify a software requirement, with the goal of determining the extent to which it was a complete, consistent, and unambiguous document. Specifically, the intent was to attain an understanding of what SREM is, how it is used, and what capability it possesses for isolating discrepancies in an existing software specification. In addition, this effort was intended to provide the basis for assessing the potential of SREM for inclusion as a tool in the current Army ADP-system development life cycle. GRA

N81-30031# TRW Defense and Space Systems Group, Huntsville, Ala.

APPLICABILITY OF SREM TO THE VERIFICATION OF MANAGEMENT INFORMATION SYSTEM SOFTWARE REQUIREMENTS, VOLUME 2 Final Report

R. P. Loshbough, M. W. Alford, J. T. Lawson, D. M. Sims, and T. R. Johnson 30 Apr. 1981 540 p 2 Vol.

(Contract DAHC26-80-C-0020)

(AD-A100721; TRW-37554-6950-001-Vol-2) Avail: NTIS HC A23/MF A01 CSCL 09/2

This volume provides the appendices that accompany Volume 1. Applicability of SREM to the Verification of Management Information System Software Requirements. It contains the following four Appendices: (1) Operation of REVS on the VAX System, (2) Regeneration of Requirements, (3) Application of RADX, and (4) Trouble Reports. GRA

N81-30039# Bolt, Beranek, and Newman, Inc., Arlington, Va. **IMPLEMENTATION OF THE CSIN (CHEMICAL SUBSTANCES INFORMATION NETWORK) USER SERVICES OFFICE Final Report**

Jan. 1981 165 p

(Contract EQ10AC025)

(PB81-176992; BBN-4569) Avail: NTIS HC A08/MF A01 CSCL 05B

A plan to implement the design for the CSIN User Services Office is presented. The specific functions, procedures, staffing, and facilities implied in the earlier design report and refined by subsequent discussions with the CSIN administration and the development contractor, Computer Corporation of America are described. GRA

N81-30973*# National Aeronautics and Space Administration, Lewis Research Center, Cleveland, Ohio.

A PROGRAM-MANAGEMENT PLAN WITH CRITICAL-PATH DEFINITION FOR COMBUSTION AUGMENTATION WITH THERMIONIC ENERGY CONVERSION (CATEC)

James F. Morris, Owen S. Merrill (DOE, Washington, D.C.), and Harsha K. Reddy (The Aerospace Corp., Los Angeles) 1981 50 p refs Presented at Intern. Conf. on Plasma Sci., Santa Fe, N. Mex., 18-20 May 1981

(Contract EC-77-A-31-1062)

(NASA-TM-82670; E-950; DOE/NASA/1062-0) Avail: NTIS

HC A03/MF A01 CSCL 20I

Thermionic energy conversion (TEC) is discussed. In recent TEC-topping analyses, overall plant efficiency (OPE) and cost of electricity (COE) improved slightly with current capabilities and substantially with fully matured technologies. Enhanced credibility derives from proven hot-corrosion protection for TEC by silicon-carbide clads in fossil fuel combustion products. Combustion augmentation with TEC (CATEC) affords minimal cost and plant perturbation, but with smaller OPE and COE improvements than more conventional topping applications. Risk minimization as well as comparative simplicity and convenience, favor CATEC for early market penetration. A program-management plan is proposed. Inputs, characteristics, outputs and capabilities are discussed. S.F.

N81-31016# Midwest Research Inst., Golden, Colo. Planning, Applications, and Impacts Div.

ORGANIZATIONAL PRECEDENTS FOR OWNERSHIP AND MANAGEMENT OF DECENTRALIZED RENEWABLE-ENERGY SYSTEMS

Richard Meunier and Jo Ann Silversmith Mar. 1981 62 p refs

(Contracts DE-AC02-77CH-00178; EG-77-C-01-4042)

(SERI/TR-744-312) Avail: NTIS HC A04/MF A01

Three existing organizational types that meet the decentralization criteria of local consumer ownership and control - cooperatives, Rural Electric Cooperatives, and municipal utilities - are examined. These three organizational precedents are analyzed in terms of their histories, structures, legal powers, sources of capital, and social and political aspects. Examples of related experiments with renewable energy technologies are given, and inferences are drawn regarding the organizations' suitability as vehicles for future implementation of decentralized renewable energy systems. DOE

N81-31017# Advanced Technology, Inc., McLean, Va.

PROJECT TRACKING SYSTEM (PTS) USER'S MANUAL

E. B. Mohr Mar. 1981 179 p

(Contract DE-AC19-79BC-10070)

(DOE/BC-10070/1) Avail: NTIS HC A09/MF A01

The Bartleville Energy Technology Center (BETC) Project Tracking System (PTS) is a computerized information system developed to generate automatic updates to other Department of Energy (DOE) systems such as the Business Management Information Systems (BMIS), as well as to aid in the in-house tracking of the cost, schedule, and manpower status of the approximately 200 BETC contracts. The PTS data base contains administrative and limited technical information on planned, active, and terminated contracts. The PTS software and data base are resident upon BETC's PDP 11/70 computer, which utilizes the RSX-11M operating system. PTS programming was done in the BASIC + II and DATA-TRIEVE languages, which allow for conversational, English-like interactions between the user and the system during both input and output sessions. DOE

N81-31022# Decisions and Designs, Inc., McLean, Va.

PROGRAM OBJECTIVES MEMORANDUM DATA BASE MANAGEMENT SYSTEM (POM-DBMS). USERS MANUAL

Kathleen A. Waslov and Kenneth P. Kuskey Washington USMC May 1981 105 p

(Contract M00027-80-C-0047)

(AD-A101695; UM-81-158; USMC-80C047-UM-01) Avail: NTIS HC A06/MF A01 CSCL 05/1

The POM-development process at Marine Corps Headquarters (HQMC) is the focal point for annually reassessing the Marine Corps' (MC's) overall priorities for present and future spending. Approximately 450 individual programs compete for programmed funds during each year's POM cycle. Since 1977, HQMC has sponsored the development of a data base management system (DBMS) to support the staff of the Deputy Chief of Staff for Requirements and Programs as it prepares the Commandant's (CMC's) POM Submission to the Secretary of the Navy. The POM DBMS is HQMC's central repository of priority and cost information during POM development, and it is the MC staff's primary tool for constructing and adjusting the CMC's program for the MC. The POM DBMS is used (1) to develop the CMC's POM submission to the Department of the Navy; (2) to determine appropriation controls for the CMC's program; and (3) to provide program-element detail on the CMC's program to aid in the preparation of updates to the Five Year Defense Program. The system supports the MC staff throughout the POM

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development, including the collection of data, the prioritization of initiatives, the packaging of initiatives into a program of consolidated decision package sets and the revision of this program based on the Secretary of Defense's Program Decision Memorandum and Amended Program Decision Memorandum. It is also used in the POM-to-budget process to determine MC appropriation controls. The objective of the Users Manual for the POM DBMS is to provide the user's non-ADP personnel with the information necessary to effectively use the system.

Author (GRA)

N81-31023# Brookhaven National Lab., Upton, N. Y. Atmospheric Sciences Div.
COMPARISON OF SYSTEM-2000 AND SCIENTIFIC INFORMATION RETRIEVAL (SIR) IN A SPECIFIC SCIENTIFIC APPLICATION

Veronica Evans 1981 41 p Presented at the ASTUTE Spring Conf., Austin, Tex., 25 Mar. 1981
(Contract DE-AC02-76CH-00016)
(BNL-29228; CONF-810361-1) Avail: NTIS HC A03/MF A01

The computer on which these reside is a CDC-6600 and the operating system is NOS-BE level 488. For this comparison study a new S2K data base and a SIR data base were created using a subset of the actual raw data from the original Acid Rain data base. Identical data was loaded in both data bases and the procedures followed were duplicated as closely as possible on both. All jobs were run in batch mode to get accurate statistics on computer time and resources. The results of certain specific procedures in terms of computer resources are discussed and the ease of implementing these procedures from the user's standpoint is illustrated. DOE

N81-31242# Bundesministerium fuer Forschung und Technologie, Bonn (West Germany).

CURRENT PROBLEMS IN THE GERMAN PROGRAM ON MATERIALS RESEARCH AND PROCESSING TECHNOLOGY IN SPACE [AKTUELLE FRAGEN DES DEUTSCHEN PROGRAMMS 'WERKSTOFFFORSCHUNG UND VERFAHRENSTECHNIK IM WELTRAUM']

G. Greger /In DGLR Spacelab Utilization: Mater. Res. and Processing Technol. in Space 1980 p 9-19 In GERMAN

Avail: NTIS HC A16/MF A01

The aims, organization, underlying concept and strategy of the program are reviewed. Delays in the space shuttle program and frequent changes in Spacelab systems requirements are identified as a major concern, posing problems of research continuity, financing and reliability. The relative merits of Spacelab experiments and fully automated experiments (MAUS) as regards coping with these problems are discussed. The corresponsability of the user during all phases of the program is indicated to be essential and should be further defined. The progress and evolution in the main research areas (physical chemistry, materials science, crystal growth, and transport processes) is reviewed. The importance of deepening interdisciplinary collaboration and global coordination is stressed. Author (ESA)

N81-31243# Deutsche Forschungs- und Versuchsanstalt fuer Luft- und Raumfahrt, Cologne (West Germany).

PROJECTS AND PLANS OF THE GERMAN PROGRAM ON MATERIALS RESEARCH AND PROCESSING TECHNOLOGY IN SPACE [PROJEKTE UND VORHABEN DES DEUTSCHEN PROGRAMMS: WERKSTOFFFORSCHUNG UND VERFAHRENSTECHNIK IM WELTRAUM]

H. S. Anton and N. Kiehne /In DGLR Spacelab Utilization: Mater. Res. and Processing Technol. in Space 1980 p 21-35 refs In GERMAN

Avail: NTIS HC A16/MF A01

The status and preliminary results of various German projects that are either planned or under way are discussed: (1) materials laboratory for the first Spacelab mission; (2) technological experiments under zero gravity (TEXUS); (3) materials science autonomous experiments under zero gravity (MAUS); (4) the shuttle pallet satellite project (SPAS), defining a family of space platforms; and (5) D1-mission, an all German flight for chemical, physical and biomedical applications. Individual experimental designs are considered and the payload configurations of the different projects are shown. A comparison of the German program and its financial implications with that of other organizations or countries is appended. Author (ESA)

N81-31371# Battelle Columbus Labs., Ohio.

OPERATION OF THE METALS AND CERAMICS INFORMATION CENTER Annual Report, 1 May 1980 - 30 Apr. 1981
Harold Mindlin and J. F. Lynch Watertown, Mass. Army Materials and Mechanics Research Center Jul. 1981 60 p
(Contract DLA900-78-C-1715)
(AD-A102212; AMMRC-TR-81-33; QPR-12) Avail: NTIS HC A04/MF A01 CSCL 11/2

This report reviews the continuing operations and development of the Metals and Ceramics Information Center for the period of May 1, 1980 through April 30, 1981. Activity and growth of the Center are discussed in terms of the major work areas: Information, Operations, Products and Services, Service-Charge Program, Marketing, and Management. Future plans for the Center also are included. Author (GRA)

N81-31724# Teledyne Geotechnical, Alexandria, Va. Seismic Data Analysis Center.

SEISMIC DATA ANALYSIS CENTER Final Report

Paul Kovacs 22 Jun. 1981 47 p
(Contract F08606-79-C-0006; DARPA Order 2551)
(AD-A102537; SDAC-TR-80-1; VSC-TR-81-13) Avail: NTIS HC A03/MF A01 CSCL 08/11

The operation and maintenance of the Seismic Data Analysis Center (SDAC) are summarized for the contract year beginning 1 October 1978 and ending 30 September 1979. Reported are the statistics relating to computer usage; information relating to the maintenance, programming, data services, data availability; and the effort to expand the research systems at the facility. This final report summarizes the operation and maintenance of the computer systems at the Seismic Data Analysis Center (SDAC) in Alexandria, Virginia. The work performed to augment and expand the online and research systems is also reported. Other activities, such as facility improvements, demonstrations, operations, and data services are also discussed. GRA

N81-32078# PEDCo-Environmental, Inc., Arlington, Tex.

EVALUATION OF TEXAS AIR CONTROL BOARD MANAGEMENT AND OPERATIONS SYSTEMS REQUIREMENTS. PART 1: IDENTIFICATION OF TACB, PHASE 1 Final Report

Dec. 1980 83 p refs Prepared in cooperation with Young (Arthur) and Co., Austin, Tex.
(Contract EPA-68-02-2535)
(PB81-180945; EPA-906/9-80-004A-Pt-1) Avail: NTIS HC A05/MF A01 CSCL 05B

Information for the design of management and operations systems to effectively implement and control the collection, storage, verification, and dissemination of emissions inventory information is presented. Essential emissions inventory information for meeting operational requirements are identified, the priority order in collecting, verifying, and storing the inventory information is developed and the formats for data use are established. J.D.H.

N81-32079# PEDCo-Environmental, Inc., Arlington, Tex.

EVALUATION OF TEXAS AIR CONTROL BOARD MANAGEMENT AND OPERATIONS SYSTEMS REQUIREMENTS. PART 2: APPENDICES TO THE PART 1 REPORT, PHASE 2 Final Report

Dec. 1980 251 p refs Prepared in cooperation with Young (Arthur) and Co., Austin, Tex.
(Contract EPA-68-02-2535)
(PB81-180952; EPA-906/9-80-004B-Pt-2) Avail: NTIS CSCL 05B

Background information required for the design of management and operations systems for emissions inventory information is given. Emissions inventory data requirements, general collection methodology, emissions inventory data dictionaries, and a list of interviewees are presented. J.D.H.

N81-32080# Bolt, Beranek, and Newman, Inc., Cambridge, Mass.
DESIGN OF THE CSIN (CHEMICAL SUBSTANCES INFORMATION NETWORK) USER SERVICES OFFICE Final Report

Nov. 1980 106 p
(Contract EQ10AC25)
(PB81-196362; BBN-4529) Avail: NTIS HC A06/MF A01 CSCL 05B

The office will be the primary contact point between the community of network users and the network administration. Direct user support activities, such as telephone assistance and

documentation writing and distribution; indirect user support activities, such as billing coordination and account management; and general system support activities, such as promotion and providing input to the network administration on user selection criteria are described. GRA

N81-32166* National Aeronautics and Space Administration, Marshall Space Flight Center, Huntsville, Ala.

TOWARD A SPACE MATERIALS SYSTEMS PROGRAM

George F. vonTiesenhausen Jun. 1981 69 p refs
(NASA-TM-82438) Avail: NTIS HC A04/MF A01 CSCL 22A

A program implementation model is presented which covers the early stages of space material processing and manufacturing. The model includes descriptions of major program elements, development and experiment requirements in space materials processing and manufacturing, and an integration of the model into NASA's long range plans as well as its evolution from present Materials Processing in Space plans. T.M.

N81-33087* Bell Telephone Labs., Inc., Murray Hill, N. J.
DATABASE ALERTING TECHNIQUES FOR OFFICE ACTIVITIES MANAGEMENT

Jo-Mei Chang and Shi-Kuo Chang 18 Jun. 1981 32 p refs
Revised Prepared in cooperation with Illinois Univ., Chicago Circle
(Contract N00014-80-C-0651)

(AD-A103041) Avail: NTIS HC A03/MF A01 CSCL 05/1

This paper approaches the problem of office activities management from the data bases viewpoint. Data base alerting techniques are developed to serve the purpose of office activities management. A conceptual framework for office information system design is presented. Simple data base alerters and implementation techniques, existential alerters and time alerters are discussed. An example of journal editing is described in detail to clarify concepts. Finally, alerter system stability is discussed. GRA

N81-33104* General Motors Technical Center, Warren, Mich.
Transportation Systems Div.

EXTENDED SYSTEM OPERATIONS STUDIES FOR AUTOMATED GUIDEWAY TRANSIT SYSTEMS: PLAN FOR TASK 5-DPM FAILURE MANAGEMENT Final Report, Nov. 1978 - Jun. 1981

J. F. Duke and R. A. Lee Jun. 1981 35 p
(Contract DOT-TSC-1783)

(PB81-210569: DOT-TSC-UMTA-80-28;
UMTA-MA-06-0048-80-11) Avail: NTIS HC A03/MF A01 CSCL 13F

The purpose of Task 5 is to enhance the capabilities of the Downtown People Mover Simulation (DPMS) and the Discrete Even Simulation Model (DESM) by increasing the failure modeling detail of these processors so that a variety of failure management strategies can be evaluated in terms of total vehicle and passenger delay. The major failure management strategies that are currently being considered in engineering studies of DPMs are listed. Software modifications, in functional terms, and analysis techniques that will permit modeling of as many of these strategies as possible are described. GRA

N81-34059* Naval Postgraduate School, Monterey, Calif.
AN EXAMINATION OF PROJECT MANAGEMENT AND CONTROL REQUIREMENTS AND ALTERNATIVES AT FNOC M.S. Thesis

Charlotte Ruth Gross Jun. 1981 86 p refs
(AD-A104127) Avail: NTIS HC A05/MF A01 CSCL 05/1

The need for a project information and control system at FNOC was examined. Personal interviews and checklists were used to determine user requirements. Several manual and automated alternatives were presented. The author concluded that the purchase of a software package, would in all probability, be the most efficient and effective alternative. Several packages were evaluated and 3 packages were finally presented for more extensive review by FNOC staff. Author (GRA)

N81-34062 Loughborough Univ. of Technology (England). Dept. of Library and Information Studies.

ADMINISTRATIVE EFFECTIVENESS, ATLAS NO. 1

[1981] 30 p Sponsored by British Library Lending Div.
(BLL-BLRDR-5529: ISBN-0-904924-21-1) Avail: British Library Lending Div., Boston Spa, Engl.

Instructions for the library management research unit's administrative effectiveness management information system are outlined. Distinction is made between management information about users of the library, and management information on operations and staff of the library. The administrative effectiveness system is designed as a straightforward management information, and costing system. The libraries' efficiency and effectiveness is suggested. The recording of less regular or unusual activities to encourage self recording whenever possible by all grades of staff is recommended. E.A.K.

N81-34068 British Library Lending Div., Boston Spa (England). Research and Development Dept.

A PLANNING PROCESS FOR PUBLIC LIBRARIES

C. Dyson Mar. 1980 35 p refs

(BLL-BLRDR-5541) Avail: British Library Lending Div., Boston Spa, Engl.

Alternative methods of measuring library services were investigated and a planning process which can be used by any public library to plan and evaluate service programs appropriate to its community's specific needs was developed and tested. Formulation of public library standards for effective performance in addition to efficient management of resources were discussed. J.M.S.

N81-34085* British Library Lending Div., Boston Spa (England).
HOW TO GO ON-LINE. GUIDELINES FOR THE ESTABLISHMENT OF ON-LINE SERVICES IN PUBLIC LIBRARIES

Stella Keenan Mar. 1980 69 p refs

(BLL-BLRDR-5533: ISBN-0-905984-57-9; ISSN-0308-2385)
Copyright. Avail: British Library Lending Div., Boston Spa, Engl.: £5.00

Guidelines to be used by public libraries considering the establishment of on-line information retrieval services are presented. The guidelines cover such topics as: service provision, cost considerations, system and equipment selection, staff considerations, promotion and publicity, and evaluation. In addition, a timetable plan shows the decisions that need to be made at the planning, implementation and operational phase of service provision. Appendices cover organizations that can provide advice to organizations setting up on-line information retrieval services. Cost detail is also given; all the cost factors that an organization should consider in establishing an on-line information retrieval service are included. J.M.S.

N81-34086* Durham Univ. (England).

AMERICAN LIBRARY ASSOCIATION PLANNING PROCESS FOR PUBLIC LIBRARIES, UK TEST

W. E. M. Morris Nov. 1979 72 p refs

(BLL-BLRDR-5540) Avail: British Library Lending Div., Boston Spa, Engl.

A benefit assessment for system change (BASYS) in libraries and information services was conducted. A planning process for use in any public library to plan and evaluate projects which are appropriate to the needs of its community was developed. A manual to act as a guide to public library authorities in carrying out their planning processes is presented. E.A.K.

N81-34094* British Library Lending Div., Boston Spa (England).
TECHNICAL PROJECT DOCUMENTATION AND ITS USE IN DESIGN Final Report

G. Pitts Jan. 1980 64 p

(BLL-BLRDR-5577) Avail: British Library Lending Div., Boston Spa, Engl.

Information which is transferred within a company in support of an engineering project, and the interface between this information and that which circulates on a national basis are examined. The strengths and weaknesses of some of the systems currently employed in industry are identified. Particular attention is given to the benefits and the usefulness of the information to the designer. A questionnaire survey of members of the Institution of Engineering Designers, a questionnaire survey of members of the Institute of Information Scientists, and interviews in companies across a range of industries were conducted. The flow of technical information is examined from two view points: user views on the usefulness of the various information channels and data on the information flow patterns used in industry. J.M.S.

LOGISTICS MANAGEMENT

Includes procurement, transportation, or maintenance of military materiel, facilities, or personnel.

A81-13167 **Standardization in military avionics systems architecture; Proceedings of the Seminar, Dayton, Ohio, November 28, 1979.** Seminar sponsored by the Institute of Electrical and Electronics Engineers. New York, Institute of Electrical and Electronics Engineers, Inc., 1979. 51 p. \$12.

The conference concentrates on the development, production, application, specification, procurement, and maintenance of digital avionics equipment and systems. Papers are presented on the military aircraft avionics in the 1980s, avionic standardization from a designer's perspective, and standardization in military system architecture. V.L.

A81-13171 **Avionic architectural standardization - Logistic support perspective.** R. C. Mason and L. D. Parriott (TRW Defense and Space Systems Group, Redondo Beach, Calif.). In: Standardization in military avionics systems architecture; Proceedings of the Seminar, Dayton, Ohio, November 28, 1979. New York, Institute of Electrical and Electronics Engineers, Inc., 1979, p. 27-34.

The advent of digital technology, specifically embedded computer systems (ECS), has provided the impetus for rapid growth in the sophistication and complexity of airborne information processing functions. Along with the growth in avionic systems sophistication, there has been a corresponding increase in their costs and a proliferation of unique computer-embedded avionic systems and subsystems. This influx of embedded computer systems has introduced a new approach to the management and support of avionics systems at air logistics centers. This paper will describe this avionic support approach. This paper takes a closer look at the problem created by the rapid influx of embedded computer systems, each with their unique architectures, for current and planned ECS support systems and then reflects on several lessons learned and discusses where both avionic architectural standards and support facility standards can help reduce the proliferation of support systems. (Author)

A81-24080 # **Investigation of the starting process of a supersonic wind tunnel.** K. Matsuo, H. Mochizuki (Kyushu University, Fukuoka, Japan), K. Sasaguchi (Kumamoto University, Kumamoto, Japan), and N. Takechi. *JSME, Bulletin*, vol. 23, Dec. 1980, p. 1975-1981. 11 refs.

The starting process of a supersonic wind tunnel with a diffuser with contraction has been studied by schlieren optical observations and pressure measurements. It has been shown that the wind tunnel starts when the flow is sonic but not choked at the second throat; the flow in the starting process has been classified into three patterns according to the area ratio of the second throat to the test section. The differences between the theoretical values and the experimental results of the starting pressure ratio and the minimum starting area at the second throat have been explained, taking into consideration that a normal shock wave assumed in the previous one-dimensional theory becomes a pseudoshock wave due to the interaction with the wall boundary layer. (Author)

A81-24256 **Early identification of access requirements.** J. P. Silva (General Dynamics Corp., Convair Div., San Diego, Calif.). In: Annual Reliability and Maintainability Symposium, Philadelphia, Pa., January 27-29, 1981, Proceedings. New York, Institute of Electrical and Electronics Engineers, Inc., 1981, p. 44-50.

Early identification of access and platform requirements can prevent cost penalties due to drawing changes and revision of orders for long-lead components. The identification method involves quantifying operational and maintenance access frequencies to position components and allocate access resources; the technique utilizes

failure rates, preventive maintenance requirements, and the system operational scenario. Finally, the design specifications are prepared for door locations, sizes, latching mechanisms, and work platform areas. A.T.

A81-24257 **ORLA - An assessment of risks.** M. W. McCarthy (Northrop Corp., Aircraft Group, Hawthorne, Calif.). In: Annual Reliability and Maintainability Symposium, Philadelphia, Pa., January 27-29, 1981, Proceedings. New York, Institute of Electrical and Electronics Engineers, Inc., 1981, p. 51-54. 7 refs.

The threshold analysis technique was used in a FORTRAN IV version of the AFLC 800-4 Optimum Repair Level Analysis (ORLA) model for the F-5G International Fighter Program. A model was constructed for ground support equipment which computes the equipment costs providing a target or marginal utility values for design input. This sensitivity analysis is also applicable to parametric studies which result in hardware that can be supported cost effectively in the field. A.T.

A81-30242 # **Oklahoma City Air Logistics Center - Approach to Embedded Computer System support.** D. R. Corder (Oklahoma City, Air Logistics Center, Oklahoma City, Okla.). In: NAECON 1980; Proceedings of the National Aerospace and Electronics Conference, Dayton, Ohio, May 20-22, 1980. Volume 1. New York, Institute of Electrical and Electronics Engineers, Inc., 1980, p. 143-147.

A consolidated approach to Embedded Computer System support has been developed which takes advantage of the weapon systems similarities to minimize resources required to develop an Avionics Integrated Support Facility. Under this support concept, individual weapon system requirements are served around a Simulation Host Processor complex. Key elements of the design are modularity and simplicity which allow for rapid application to new systems and standardized support techniques which ease the training and experience requirements. V.L.

A81-30244 # **Software support equation of accountability - A challenge.** J. D. R. Ferrell (USAF, San Antonio Air Logistics Center, Kelly AFB, Tex.). In: NAECON 1980; Proceedings of the National Aerospace and Electronics Conference, Dayton, Ohio, May 20-22, 1980. Volume 1. New York, Institute of Electrical and Electronics Engineers, Inc., 1980, p. 152-156. 10 refs.

Software must continually catch up with hardware changes and incompatibilities. Avionics software should be designed in such a way as to have the inherent and dynamic stability to remain accurate and correct and an equation of accountability is needed to solve this problem. The objective of this equation should be to expedite the means to develop accurate software which can be proven without statistical and mathematical bounds to be accurate, and which would ease the military user's task. More studies are needed to achieve the critical operational and support requirements of avionics software for the long term and a definition of the problem and means of solving it are presented. K.S.

A81-30270 # **Joint tactical information distribution system /JTIDS/ software support philosophy.** R. J. Iliff (USAF, Warner Robins Air Logistics Center, Robins AFB, Ga.). In: NAECON 1980; Proceedings of the National Aerospace and Electronics Conference, Dayton, Ohio, May 20-22, 1980. Volume 1. New York, Institute of Electrical and Electronics Engineers, Inc., 1980, p. 385-388.

The Joint Tactical Information Distribution System (JTIDS) is a software controlled, digital communication system using a message standard and signal standard to ensure interoperability. It is the first system to be developed by DOD which crosses several functional lines. JTIDS is also an anti-jam system which requires periodic testing against Electronic Counter-Measures (ECM). JTIDS will give the Air Force Logistics Command an opportunity to make extensive use of existing Avionics Integrated Support Facilities (AISF's) with a minimum of additional equipment and manpower. Examples of existing facilities that JTIDS will interface with are the E-3A Mission Simulators, F-15 and F-16 AISF's, and the Tactical Air Control System-Tactical Air Defense System (TACS/TADS) reprogramming facility at HQ Tactical Air Command. The JTIDS software support

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philosophy is presented discussing implementation and its management planning. K.S.

A81-30271 # The logistics of software - AFLC in the 1980s. P. M. Vican (USAF, Logistics Command, Wright-Patterson AFB, Ohio). In: *NAECON 1980; Proceedings of the National Aerospace and Electronics Conference*, Dayton, Ohio, May 20-22, 1980. Volume 1. New York, Institute of Electrical and Electronics Engineers, Inc., 1980, p. 389-394.

Weapons systems that contain digitally reprogrammable computers, known as weapons systems embedded computer systems (ECS), have created a new logistics support requirement for the Air Force Logistics Command. By 1985, the AFLC will be supporting over one hundred seventy ECS's, and over four hundred different types of automatic test equipment. AFLC activity to meet the support requirements for these weapons systems involve (1) justifying and recruiting manpower, (2) building facilities, (3) exploring new technology, (4) enhancing ECS management and modification, and (5) developing long range plans. Attention is given to the AFLC National Software Work (NSW) Technology Demonstration, a study of the Air Force Software development and support, an effort to develop a long range ECS support plan, the Generic Logistics Decision Tree (GLDT), and ESP-80. K.S.

A81-30298 Simulation - A tool for logistics planning. N. L. Orndorff (Westinghouse Electric Corp., Integrated Logistics Support Div., Hunt Valley, Md.). In: *NAECON 1980; Proceedings of the National Aerospace and Electronics Conference*, Dayton, Ohio, May 20-22, 1980. Volume 2. New York, Institute of Electrical and Electronics Engineers, Inc., 1980, p. 683-688.

It is noted that such advanced decision tools as simulation enable a planner to evaluate, modify, and, in effect, optimize a complex logistics system before initiating the actual policies. The methodology is demonstrated by analyzing a repair depot in which defective assemblies arrive and are allocated the use of such resources as test stations, technicians, and spare parts. Simulation is also applied to capture the cost of engineering paperwork such as drawings and revision notices from development to release and subsequent revision. C.R.

A81-42197 # The Air Force Comprehensive Engine Management System /CEMS/. L. Fuller (USAF, San Antonio Air Logistics Center, Kelly AFB, TX), R. Olkfy (USAF, Logistics Command, Wright-Patterson AFB, OH), and J. Wenke (ARINC Research Corp., Annapolis, MD). AIAA, SAE, and ASME, Joint Propulsion Conference, 17th, Colorado Springs, CO, July 27-29, 1981, AIAA Paper 81-1452. 10 p. 8 refs.

The Comprehensive Engine Management System (CEMS), developed by the Air Force Logistics Command, is based on an incremental approach to facilitate implementation and reduce management burden. Increment I provides configuration management of the TF-34, TF-41, and F-100 engines, focusing on the engine and its serialized components configurations, time and cycle status of the components, and the time compliance technical order tracking of the engines. Increment II, and extension of I, supports serialized tracking of critical components and appropriate time/temperature and cycle data related to the TF-33, TF-30, J-85, J-60, and TF-39 engines. Increment III involves status reporting, distribution and inventory control, and financial and inventory accounting. Increment IV provides for the collection and processing of in-flight performance data, engine health profiles, and significant maintenance history action information. J.F.

A81-43159 # C-X - A case for scenario-oriented requirements. T. D. Pilsch (USAF, Military Airlift Command, Scott AFB, IL). *American Institute of Aeronautics and Astronautics, Aircraft Systems and Technology Conference*, Dayton, OH, Aug. 11-13, 1981, Paper 81-1690. 11 p. 28 refs.

A discussion is presented of the novel characteristics of the Air Force's recent C-X Request For Proposal (RFP) document, which relies on a set of mission scenarios to influence design solutions among industry engineers. The synthesis of these scenarios, and the identification of the potential strengths and weaknesses of the use of

detailed mission scenarios to define aircraft, are covered. Special attention is given the crucial issue of airfield availability, suitability and condition. It is expected that the scenario method of RFP documentation will stimulate innovative responses from designers that the conventional, performance-defining RFP would discourage. O.C.

A81-46340 # Soviet practice in designing and procuring military aircraft. R. D. Ward (General Dynamics Corp., Fort Worth, TX). *Astronautics and Aeronautics*, vol. 19, Sept. 1981, p. 24-38.

A detailed historical review is presented of the changing organization of military aircraft design, development and production in the Soviet Union since the end of the Second World War. Attention is given the policy-making hierarchy of such ministries as Defense and Aircraft Production, and the distribution of responsibilities among the research institutes comprising the Ministry of Aircraft Production: (1) the Central Aero-Hydrodynamics Institute; (2) the Scientific Research Institute for Aircraft Equipment; (3) the All-Union Institute of Aviation Materials; (4) the Flight Research (Test) Institute; (5) the Scientific Research Institute for Aviation Technology and Organization of Production; (6) the Central Institute of Aviation Motor Building; and (7) the Central Design Office, which directs the eight experimental-design bureaus engaged in detail design and construction of prototype aircraft. Extensive differences between fighter and bomber aircraft design methods are noted. O.C.

A81-46450 DeLauer clarifies systems acquisitions initiatives. R. DeLauer (U.S. Department of Defense, Washington, DC). *Military Electronics/Countermeasures*, vol. 7, Sept. 1981, p. 81-83, 92.

Consideration is given to proposed Department of Defense (DoD) initiatives aimed at (1) reducing acquisition costs; (2) shortening the acquisition cycle; (3) improving weapons support and readiness; and (4) improving the DSARC process. Critical remarks are made concerning multi-year contracting, on the grounds that it may significantly reduce acquisition flexibility in response to unforeseen changes in the nature of enemy capabilities. A series of recommendations is also made for the reorganization of the USDRE along lines dictated by the greater emphasis on acquisition process refinement and streamlining. O.C.

A81-46480 # Aircraft/avionics environmental integration program. P. Hermes and J. Wafford (USAF, Aeronautical Systems Div., Wright-Patterson AFB, OH). In: *Life cycle problems and environmental technology; Proceedings of the Twenty-sixth Annual Technical Meeting*, Philadelphia, PA, May 12-14, 1980.

Mt. Prospect, IL, Institute of Environmental Sciences, 1980, p. 23-27.

Activities of USAF/Aeronautical Systems Division related to aircraft/avionics environmental integration are reviewed with emphasis on specifications and standards being developed to assist in acquiring equipments and systems in a cost effective manner. The primary purposes of these documents are: (1) to introduce new analyses and tradeoff studies in the early development phases; (2) to provide a contractual basis for informal activities previously accomplished by the contractors; and (3) to replace or supplement universal requirements with engineering approaches tailored to specific applications. V.L.

A81-48380 Determination of cargo container inventories through logistics simulation. D. H. Cone (Boeing Computer Services Co., Seattle, WA). In: *Summer Computer Simulation Conference*, Seattle, WA, August 25-27, 1980, Proceedings. Arlington, VA, AFIPS Press, 1980, p. 714-718.

A Container Movement Logistics Model was designed to evaluate the air shipment of cargo containers within a network of airport pairs. The simulation described in the paper was designed to determine the number of cargo containers required for a known level of air shipments, but the technique may be applied to surface transportation modes including rail, truck, and ship. (Author)

N81-10070# Air Force Inst. of Tech., Wright-Patterson AFB, Ohio. School of Systems and Logistics. AN ANALYSIS OF AIR FORCE MANAGEMENT OF TURBINE ENGINE MONITORING SYSTEMS (TEMS) M.S. Thesis

Elbert B. Hubbard, III and Gregory A. Swecker Jun. 1980
118 p refs
(AD-A089365; AFIT-LSSR-68-80) Avail: NTIS
HC A06/MF A01 CSCL 21/5

Turbine Engine Monitoring Systems (TEMS) are engine health monitoring and diagnostic tools being developed and tested for use on Air Force engines in order to improve and reduce the cost of engine maintenance and management and to aid in the implementation of On Condition Maintenance. Previous researchers have described the major features of TEMS, analyzed the results of development and test efforts, and identified problems which must be overcome. This study examines the problem of fragmentation which exists in the Air Force management of TEMS development and testing. The authors describe and analyze the overall Air Force management of TEMS. Management problems were identified and classified into three major areas: structure and role problems, information flow and integration problems, and leadership and command problems. Four alternative management concepts were analyzed. Based on this analysis, the authors recommend that the management structure be modified, and a TEMS Task Force be established to more effectively utilize TEMS for Air Force engine maintenance and management. GRA

N81-11639# Dynamics Research Corp., Wilmington, Mass. Advanced Systems Dept.
HUMAN RESOURCES, LOGISTICS, AND COST FACTORS IN WEAPON SYSTEM DEVELOPMENT PROJECT SUMMARY Final Report

Gerard F. King and William R. Askren Brooks AFB, Texas AFHRL Sep. 1980 74 p refs
(Contract F33619-77-C-0016; AF Proj. 1959)
(AD-A089708; AFHRL-TR-80-8) Avail: NTIS
HC A04/MF A01 CSCL 15/5

This report provides a summary of an Air Force advanced development effort, Integration and Application of Human Resource Technologies in Weapon System Design. The project resulted in the development and demonstration of a methodology, the coordinated human resource technology (CHRT), and its complementary consolidated data base. The methodology is applicable throughout weapon system acquisition and provides for (a) the early assessment of the system design and support plan impact on human resources, logistics, and costs, and (b) the development of a mutually supportive and coordinated training program and technical manual set. Specifically, this report summarizes (a) the development of CHRT and the CDB, (b) the demonstration of the CHRT and the CDB on major systems of the Advanced Medium STOL Transport, (c) CHRT and the CDB as they presently are defined, and (d) the guidelines for future application of CHRT and the CDB. GRA

N81-12928# General Accounting Office, Washington, D. C. Procurement and Systems Acquisition Div.

ARE MANAGEMENT PROBLEMS IN THE ACQUISITION OF AIRCRAFT GAS TURBINE ENGINES BEING CORRECTED
30 Sep. 1980 75 p

(AD-A090520; GAO/PSAD-80-72) Avail: NTIS
HC A04/MF A01 CSCL 05/1

Recent problems with fighter/attack aircraft engines have been primarily due to the development concepts, procedures, and practices that did not provide the time and money to (1) adequately develop the engines before production and use and (2) bring promising technology up to the point that it was ready for applications in new engines. Other major factors that adversely affected engine development were: inadequate definition of the engines' usage and, consequently, the inability to design engines to their expected usage and to verify the design by testing to that usage; emphasis on performance requirements with a resulting lack of standards, data base, and analytical procedures to achieve a balance among performance, operability, reliability, durability, and costs; and inadequate flight testing of engines. GRA

N81-13618# Aeronautical Systems Div., Wright-Patterson AFB, Ohio. Deputy for Development Planning.

ACQUISITION STRATEGY IMPLICATIONS OF A LONG RANGE COMBAT AIRCRAFT (LRCA) Final Report, Feb. - Jun. 1980

Jerome P. Sutton Jul. 1980 84 p
(AD-A091109; ASD/XRM-TR-80-5044) Avail: NTIS
HC A05/MF A01 CSCL 01/3

This report contains a discussion of the acquisition implications of the Long Range Combat Aircraft (LRCA) to include: affordability, availability, logistics, and SALT II aspects. Assessment of the LRCA concept involved consideration of two alternative program schedules, Milestone II 1981, and Milestone II - 1985, and thus, consideration of a near term and mid-term technology level. Since the LRCA is in a pre-Milestone O status, no firm conclusions regarding an ultimate program can be reached; results of this assessment would support some preliminary implications. For the LRCA to be affordable requires that substantive reprogramming of the budget be undertaken. More importantly, the priority of the program must be sustained throughout the acquisition cycle. The availability of resources to support the LRCA requires planning and management and does not present insurmountable difficulties. The initial operational capability (IOC) may, depending on the exigency of the need, not be when one may wish it. Full capability is most likely not possible prior to the mid-1990s. The final design of the LRCA and its weapons complement are dependent upon consideration of the Strategic Arms Limitation Treaty (SALT II) as ratified. GRA

N81-17062# Dynamics Research Corp., Wilmington, Mass.
DIGITAL AVIONICS INFORMATION SYSTEM (DAIS): LIFE CYCLE COST IMPACT MODELING SYSTEM (LCCIM). A MANAGERIAL OVERVIEW Final Report

John C. Gocowski and H. Anthony Baran Brooks AFB, Tex. AFHRL Nov. 1980 41 p refs
(Contract F33615-75-C-5218; AF Proj. 2051)
(AD-A093281; AFHRL-TR-79-4) Avail: NTIS
HC A03/MF A01 CSCL 05/1

This report provides an overview of the Life Cycle Cost Impact Modeling System (LCCIM). The LCCIM can be used to assess the impact of weapon system characteristics on system support resource requirements and life cycle cost (LCC). It was developed to enhance present Air Force capability to conduct tradeoffs between competing design, manpower, and logistics alternatives early in the weapon systems acquisition process. This report also contains a general description of the initial application of the LCCIM an analysis of the potential impacts of the Digital Avionics Information System (DAIS) Concept of avionics integration on LCC and system support personnel requirements. References are provided for other related reports which describe that application, document the development of LCCIM components and provide user's guide information and computer program listings. GRA

N81-17088# Systems Control, Inc., Palo Alto, Calif.

TURBINE ENGINE FAULT DETECTION AND ISOLATION PROGRAM, PHASE 1. VOLUME 2: REQUIREMENTS DEFINITION FOR AN INTEGRATED ENGINE MONITORING SYSTEM Final Report, 15 Nov. 1978 - 15 Aug. 1979

Laura E. Baker, Ronald L. DeHoff, and W. Earl Hall, Jr. Wright-Patterson AFB, Ohio AFWAL Apr. 1980 270 p
(Contract F33615-78-C-2162; AF Proj. 3066)
(AD-A093226; AFWAL-TR-80-2053-Vol-2) Avail: NTIS
HC A12/MF A01 CSCL 21/5

Contents: Appendix A: Orientation Interview Analysis; Appendix B: Survey Design and Analysis; Appendix C: Engine Maintenance Support System Survey Responses; Appendix D: Task Force Review Transcripts. GRA

N81-17089# Systems Control, Inc., Palo Alto, Calif.

TURBINE ENGINE FAULT DETECTION AND ISOLATION PROGRAM, PHASE 1. VOLUME 1: REQUIREMENTS DEFINITION FOR AN INTEGRATED ENGINE MONITORING SYSTEM Final Report, 15 Nov. 1978 - 15 Aug. 1979

Laura E. Baker, Ronald L. Dehoff, and W. Earl Hall, Jr. Wright-Patterson AFB, Ohio AFWAL Apr. 1980 124 p refs
(Contract F33615-78-C-2062)
(AD-A093225; AFWAL-TR-80-2053-Vol-1) Avail: NTIS
HC A06/MF A01 CSCL 21/5

Automated engine monitoring has emerged as an important element in the Air Force's strategy to reduce propulsion system support costs and to improve aircraft operational availability. There has been a long history of development activity directed towards engine monitoring. These systems have demonstrated that sensor and automated data acquisition can be implemented effectively in both prototype and operational applications. Historically, however, no Air Force system has resulted in validated improvement in the engine maintenance and logistics process

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nor in a substantial cost savings. This situation is due in part to the fact that the performance data were not reduced to a concise, usable format relevant to the decision process of the maintenance personnel. Moreover, there was no procedure developed for integrating the performance data into the maintenance framework. This report presents the results of an intensive study of the Air Force maintenance/logistics process based on a selected sample of tactical bases, depots, and major commands. The objective is to define the requirements that the Air Force engine management structure imposes on automated data integration, in general, and engine performance monitoring, in particular. Such an automated integration of turbine engine monitoring system data with current data systems requires coordination between a variety of sources, both manual and automated. The results of this study are the requirements for such integration based on typical Air Force maintenance needs. GRA

N81-19015# Air Force Inst. of Tech., Wright-Patterson AFB, Ohio. School of Engineering.

APPLICATION OF SCHEDULING HEURISTICS ON THE AIRCRAFT MAINTENANCE DEPOT M.S. Thesis

Joseph William Adams, Jr. Dec. 1980 54 p refs
(AD-A094815; AFIT/GOR/OS/80D-1) Avail: NTIS
HC A04/MF A01 CSCL 12/2

Scheduling heuristics were applied to a model of the aircraft maintenance depot at Warner Robins Air Logistics Center. Since the C-141 aircraft was being overloaded into depot, heuristics which gave the C-141 priority were tested in an effort to reduce the mean and variance of the distribution of times the C-141 aircraft spent at the depot. One heuristic was found which reduced the average depot time by 4%. The significance of this decrease was calculated to be 91%. A similar heuristic reduced the variance by 81%, with a significance of 100%. Thus, the potential exists for improving the flow of the overloaded C-141 aircraft through the depot, using scheduling heuristics. GRA

N81-19961# Air Force Inst. of Tech., Wright-Patterson AFB, Ohio. School of Engineering.

A COMPUTATIONALLY EFFICIENT HEURISTIC FOR A TWO-ECHELON, TWO-INDENTURE INVENTORY MODEL M.S. Thesis

William H. Hughes, Jr. Dec. 1980 128 p refs
(AD-A095113; AFIT/GOR/OS/80D-4) Avail: NTIS
HC A07/MF A01 CSCL 15/5

This project addresses the computational difficulties of MOD-METRIC, a two-echelon, two-indenture recoverable item inventory model which is used by the Air Force Logistics Command (AFLC). As background, the theoretical development and current solution technique of MOD-METRIC are presented. After identifying the major causes of the computational difficulties, a different approach to solving the MOD-METRIC problem, based on recent work by Kotkin and Muckstadt, is presented. The final form of the efficient heuristic proposed in this project incorporates a new estimation procedure for the important parameters of this heuristic, and also includes an expanded search over those parameters. The results of comparing heuristic solutions with solutions obtained using the current MOD-METRIC system indicate that the heuristic provides solutions that are very close to optimal at a greatly reduced computational cost for a variety of MOD-METRIC problems. An additional benefit of the heuristic is that it generates many more solutions in a single computer run than does the current system. It is recommended that users of the current MOD-METRIC system use the implemented heuristic, after gaining confidence in its accuracy. Additionally, it is hoped that this efficient heuristic will provide an incentive for AFLC to incorporate a two-indenture model into the AFLC recoverable item inventory management system. GRA

N81-19965# Naval Research Lab., Washington, D. C. Technical Information Div.

RECORDS SYSTEMS OF THE NAVAL RESEARCH LABORATORY: CENTRAL RECORDS AND DIRECTIVES SYSTEM RECORDS

D. K. Allison 24 Feb. 1981 63 p
(AD-A095178; NRL-MR-464) Avail: NTIS
HC A04/MF A01 CSCL 05/2

This report results from the first phase of a comprehensive study of all archival records systems of the Naval Research Laboratory. The report describes two major archival collections: the central records of the Laboratory, which are managed by

the Records and Correspondence Management Branch, and the records of NRL Directives--official policy declarations--which are managed by the Administrative Management Section. The aim of the report is to explain what constitutes the collections, how they are organized, and how they may best be used. GRA

N81-19966# Corps of Engineers, Seattle, Wash.
IN-HOUSE INFORMATION SYSTEM (IHIS)
STUDY/PROJECT REPORT Final Report, Nov. 1978 - Mar. 1980

Ellen M. Traxel, Mary K. Pritchard, and Nancy E. Taghon Oct. 1980 25 p
(AD-A095101) Avail: NTIS HC A02/MF A01 CSCL 05/2

Lack of a systematic information policy in the Seattle District Army Corps of Engineers resulted in inefficient use of internal information and staff time. After the problem was analyzed by the District's library staff, an in-house computerized information storage and retrieval system was tested. A sample of in-house reports was indexed and input into the local Harris computer utilizing FAMULUS software. The final analysis of the sample determined that the FAMULUS software was insufficient to manipulate the large file. The study team recommended that the purchase of large file, bibliographic oriented software be made to allow a larger file size and more sophisticated searching capabilities. GRA

N81-20152# Army Materiel Command, Redstone Arsenal, Ala. Engineering Directorate.

MICROELECTRONICS AVAILABILITY FOR THE ARMY'S MISSILES

Charles E. Riley 15 Sep. 1980 13 p refs
(AD-A095379; AD-E950095; DRSMI-RS-81-2-TR) Avail:
NTIS HC A02/MF A01 CSCL 09/5

Our modern Army is critically dependent on high technology and in particular sophisticated electronics. Microcircuit technology is the 'brain-trust' of our advanced weapon systems. Because of the central role that microelectronics plays in the total acquisition, and maintenance of the Army's weapon systems, it is extremely important that the Army have ready access to this technology. However, the semiconductor industry is not motivated toward serving this need and therefore potential supply problems exist in this area. The Army's requirements cannot be satisfied with off-the-shelf standard products produced by the large semiconductor manufacturers. Rather, they are typically low volume, high reliability, military standard components -- some of which have the added requirement of radiation hardening. In this report the many facets and ramifications which impact the cause/effect relationships among the various factors of this very timely problem will be discussed. GRA

N81-20290# Logistics Management Inst., Washington, D. C.
THE DEVELOPMENT OF SYNTHETIC FUELS: DEPARTMENT OF DEFENSE LOGISTICS IMPLICATIONS Final Report

Connelly D. Stevenson Nov. 1980 35 p
(Contract MDA903-77-C-0370)
(AD-A095713; LMI-ML010) Avail: NTIS HC A03/MF A01
CSCL 21/4

The Department of Defense (DoD) has been testing synthetic fuels, especially shale oil, since 1970. The DoD regards synthetic fuels as potential alternative liquid hydrocarbon energy source, especially for mobility applications. The Energy Security Act (ESA) requires the DoD to consume a substantial portion of the initial output of synthetic fuels in order to provide a guaranteed market for the new industry. It is impossible to predict the synthetic fuel production rate growth. The DoD should make incremental flexible projections of synthetic fuel use rates, both for testing and for operational applications, in order to carry out its ESA responsibilities and simultaneously to exploit the synthetic fuels potential. GRA

N81-21071# General Accounting Office, Washington, D. C. Mission Analysis and Acquisition Div.

REVIEW OF AIR FORCE'S NEXT GENERATION TRAINER AIRCRAFT PROGRAM DEPARTMENT OF DEFENSE

9 Feb. 1981 30 p
(AD-A096238; GAO/MASAD-81-2) Avail: NTIS
HC A03/MF A01 CSCL 01/3

The Air Force's original plans effectively eliminated the Navy's current primary trainer aircraft, the T-34C, from consideration as

its new primary trainer aircraft. GAO believes this elimination is inconsistent with OMB Circular A-109. This inconsistency has, however, been negated by recent congressional direction for the Air Force to evaluate the T-34C as an alternative. The Air Force could use the T-34V as its primary trainer. It does not, however, perform as well as the current primary trainer or well enough to meet the stated requirements for the new primary trainer. The relative cost effectiveness of various alternatives, including the T-34C is uncertain. One analysis prepared by a consultant for the Air Force showed that the T-34C would be the least costly alternative for the primary phase of the Air Force's undergraduate pilot training program, but would be the most costly alternative if the total program were considered. Uncertainty exists regarding some assumptions and cost data in the analysis. The Air Force is also considering a service life extension of its current primary trainer as an alternative to a new acquisition. GRA

N81-21960# Logistics Management Inst., Washington, D. C.
DEFENSE ENERGY INFORMATION SYSTEM (DEIS):
DEIS-80 SYSTEM DESIGN SPECIFICATION Final Report
 Joan Lengel Aug. 1980 177 p
 (Contract MDA903-77-C-0370)
 (AD-A096263; LMI-ML917) Avail: NTIS HC A09/MF A01
 CSCL 05/1

The Defense Energy Information System (DEIS) is a worldwide, automated, energy management information system. It provides data on petroleum products used as mobility fuels by the military departments as well as most energy sources used for utility services at DoD installations. DEIS consists of two related information systems. DEIS 1 reports the disposition and consumption of petroleum products, notably aviation gasoline, jet fuels, motor gasoline, distillate and residual oils within DoD. DEIS II reports the consumption of utility energy, such as electricity, natural gas, purchased steam/hot water, fuel oil and coal. It reports the consumption and generation of energy from renewable sources. This document presents the System Design Specification for the enhanced DEIS (DEIS 80). As specified, DEIS 80 improves the utility of the existing system by including additional data, supporting management queries of the DEIS 80 data bases on-line, and providing the capability for automated data analysis. This system design specification serves as the guide for the computer programming of DEIS 80. It adheres to the requirement for system specification in the 'Automated Data Systems Documentation Standards.' GRA

N81-22971# Boeing Co., Seattle, Wash. Product Support/
 Experience Analysis Center.
DEVELOPMENT OF MAINTENANCE METRICS TO FORE-
CAST RESOURCE DEMANDS OF WEAPON SYSTEMS.
ANALYSIS AND EVALUATION, REVISION A Interim Report,
1 Mar. 1978 - 15 Oct. 1979
 Donald K. Hindes, Gary A. Walker, David H. Wilson, and Frank
 Maher (AF Human Resources Lab., Wright-Patterson AFB, Ohio)
 Feb. 1980 156 p refs Revised
 (Contract F33615-77-C-0075)
 (AD-A096688; D194-10089-1) Avail: NTIS
 HC A08/MF A01 CSCL 05/1

This report describes the results of the first four tasks of an eight task study. The total effort is intended to develop more accurate metrics and weightings to be incorporated into the Air Force method (Logistics Composite Model (LCOM)) for determining manpower and other resource requirements for operational and developing weapon systems. The approach taken for this portion of the study effort was to identify, obtain, review and catalog related research and/or descriptive studies; select a representative cross section of aircraft and subsystems/equipments; identify and select applicable study parameters/variables; and acquire field experience data from various maintenance management information systems and on-site visits to operational units. The data base thus accumulated was computer processed via LCOM criteria in preparation for follow-on analysis. GRA

N81-22972# Boeing Co., Seattle, Wash. Product Support/
 Experience Analysis Center.
DEVELOPMENT OF MAINTENANCE METRICS TO FORE-
CAST RESOURCE DEMANDS OF WEAPON SYSTEM.
MAINTENANCE METRICS AND WEIGHTINGS, REVI-
SION A Interim Report, 1 Nov. 1978 - 1 Oct. 1979
 Donald K. Hindes, Gary A. Walker, David H. Wilson, and Frank

Maher (AF Human Resources Lab., Wright-Patterson AFB) Oct.
 1980 383 p refs Revised
 (Contract F33615-77-C-0075)
 (AD-A096689; D194-10089-3) Avail: NTIS
 HC A17/MF A01 CSCL 05/1

The approach taken for this portion of the study effort was to utilize the source data identified in Task V as inputs to develop statistical models for the estimation and prediction of the maintenance action demands of the equipment items selected for study. The data case values acquired for the lists of hardware, operational parameters which were found in Task V (Analyzing and Prioritizing Parameters) to be directly and strongly related to the maintenance demand rates of the selected equipment items were reconstituted into input data sets for the modeling process. This process resulted in one hardware, one operational, and one environmental data set being associated with each aircraft subsystem studied. Step-wise regression analysis was then applied to each data set for each subsystem's equipment to obtain best fit multiple regression equations explaining maintenance action demand as a function of equipment characteristic parameters, as a function of operational characteristic parameters, and as a function of environmental characteristic parameters. These separate equations for each type of parameter constitute 'generic' Maintenance Metrics and Weightings Models which facilitate the estimation of expected maintenance action demand for any aircraft subsystem when only equipment characteristics, only operational characteristics, or only environmental characteristics are known. GRA

N81-22973# Boeing Co., Seattle, Wash. Product Support/
 Experience Analysis Center.
DEVELOPMENT OF MAINTENANCE METRICS TO FORE-
CAST RESOURCE DEMANDS OF WEAPON SYSTEMS.
ANALYSIS AND RESULTS OF METRICS AND WEIGHTINGS,
REVISION A Interim Report, 1 Nov. 1978 - 1 Oct. 1979
 Donald K. Hindes, Gary A. Walker, David H. Wilson, and Frank
 Maher (AF Human Resources Lab., Wright-Patterson AFB, Ohio)
 Nov. 1980 164 p refs Revised
 (Contract F33615-77-C-0075)
 (AD-A096690; D194-10089-4) Avail: NTIS
 HC A08/MF A01 CSCL 05/1

This report describes the method and results of the eighth task to Develop Maintenance Metrics to Forecast Resource Demands of Weapon Systems. The purpose of this task was to perform simulation experiments with existing LCOM aircraft simulators using the newly developed maintenance metrics and weightings in order to validate the techniques and data developed during the course of this study. The findings indicate that the new maintenance metrics predictor equations can provide acceptable estimations of overall aircraft maintenance demand rates under a wide variety of equipment, operational, and environmental characteristics. These general models could be used for predicting equipment failure rates in many user situations such as LCOM analyses and new aircraft concept definition. GRA

N81-22974# Arinc Research Corp., Annapolis, Md.
AIRCRAFT MODIFICATION MANAGEMENT EVALUATION
Final Report
 S. Baily Dec. 1980 115 p refs
 (Contract F33615-80-C-5102)
 (AD-A096458) Avail: NTIS HC A06/MF A01 CSCL 05/1

Because of the long lead times and large budgetary outlays associated with major weapon system acquisitions, it is planned that most of the current inventory of US Air Force aircraft types will remain in service through the 1990s. As a result of this continued use of existing aircraft, the Air Force must pursue an aggressive modernization program to maintain the force structure at a high level of operational readiness. Rapidly expanding technology is being exploited to maintain a high degree of capability in an aging force. These factors are expected to result in an extensive aircraft retrofit program at least through the year 2000. To ensure the smooth implementation of this modification effort for aircraft weapon systems, the Air Force must continue to improve modification management techniques. Fundamental problem areas exist in current Air Force management techniques for aircraft modification. Therefore, this analysis was undertaken (1) to identify, define, and validate the most significant problem areas in aircraft modification management; (2) to examine the cause-and-effect relationship of identified problems and develop a structured approach to their resolution; and (3) to

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identify topics requiring research and initiatives leading to improvement in aircraft modification management. GRA

N81-23079# General Accounting Office, Washington, D. C. Logistics and Communications Div.

F-16 INTEGRATED LOGISTICS SUPPORT: STILL TIME TO CONSIDER ECONOMICAL ALTERNATIVES

20 Aug. 1980 56 p

(PB81-137473; LCD-80-89) Avail: NTIS HC A04/MF A01 CSCL 01C

While the Air Force's integrated logistics support plan for the F-16 should ensure that the aircraft will be adequately maintained, there is still time and opportunity to improve its effectiveness and reduce support costs. Several alternative operational and support concepts which Department of Defense and Air Force logistics planners need to consider for the still developing F-16 program are recommended. GRA

N81-23082# Naval Air Systems Command, Washington, D. C. **NAVAIR AVIONICS MASTER PLAN**

26 Feb. 1981 243 p

(AD-A097522) Avail: NTIS HC A11/MF A01 CSCL 09/5

The purpose of the NAVAIR Avionics Master Plan (NAMP) is to: Disseminate Naval Air Systems Command (NAVAIR) policy and guidance in all aspects of the development of Naval avionics equipment; Provide a single comprehensive document highlighting all aspects of Naval avionics - its current status, its requirements, and its long range objectives; Establish a planning baseline to serve as a foundation for overall advanced planning; Focus attention on management issues and technological problems that require resolution in the near term and on those special issues that require immediate attention to solve critical problems that require resolution in the near term and on those special issues that required immediate attention to solve critical problems to ensure the orderly availability of needed avionic equipment.

Author (GRA)

N81-23325# Boeing Aerospace Co., Seattle, Wash. Experience Analysis Center.

DEVELOPMENT OF MAINTENANCE METRICS TO FORECAST RESOURCE DEMANDS OF WEAPON SYSTEMS (PARAMETER POLARIZATION), REVISION A Interim Report, 1 Aug. 1978 - 16 Oct. 1979

Donald K. Hinds, Gary A. Walker, David H. Wilson, and Frank Maher Oct. 1980 320 p refs

(Contract F33615-77-C-0075)

(AD-A097692; D94-10089-2-Rev-A)

Avail: NTIS

HC A14/MF A01 CSCL 01/3

This report describes the method and results of the fifth of eight tasks to 'Develop Maintenance METRICS To Forecast Resource Demands of Weapon Systems'. The purpose of this task was to analyze the data collected in tasks 1 through 4 to detect, test, and rank relationships between the study parameters and maintenance demand rates. GRA

N81-23937# Boeing Aerospace Co., Seattle, Wash. **WEAPONS SYSTEM SUPPORT RESOURCES DEMAND PARAMETERS - LOGISTICS Progress Report, Jan. - Dec. 1980**

G. A. Walker 1 Feb. 1981 231 p refs

(AD-A097517; D194-10074-2)

Avail: NTIS

HC A11/MF A01 CSCL 01/3

This document presents preliminary results for Phase 3 of a study to seek ways of developing more accurate measures and weightings to improve resource requirement predictions for operational and emerging weapon systems. These improved measures can then be used on new programs to predict maintenance demands (human and material), for design tradeoff studies early in the system development process to reduce the overall weapon system life cycle cost and increase mission readiness. During Phase 3 (1980) follow-on in-depth statistical analysis of the preliminary findings was performed to identify various subsystem equipment maintenance resource demand vs generic parameter(s) sub-set(s) relationships, such as equipment, operational, environmental, maintenance, and general characteristics. The plan for the second half of Phase 3 (1981) is to further investigate those maintenance resource demands that have strongly correlated impact parameters within the various subsystems and equipments for identification of positive relationships and their cause factors. Author (GRA)

N81-24080# Pratt and Whitney Aircraft, West Palm Beach, Fla. Government Products Div.

DEVELOPMENT TEST REQUIREMENTS

J. B. Fyte and J. F. Montgomery (AFAPL, Wright-Patterson AFB, Ohio) In AGARD Turbine Engine Testing Jan. 1981 6 p refs

Avail: NTIS HC A21/MF A01

Propulsion system test requirements are established that are to provide an operationally acceptable propulsion system, and maintenance and logistic support plans which are appropriate to the usage requirements. Specific emphasis is given to the impact of changes in weapon system characteristics and usage on engine performance, operability, and life. The concept of baseline engine characteristics, including maintenance requirements based on evolving weapon system characteristics are also considered.

R.C.T.

N81-25054# Synectics Corp., Fairfax, Va.

AUTOMATED AIR INFORMATION PRODUCTION SYSTEM, PHASE 2 Final Technical Report, Jul. 1978 - Aug. 1980

R. Patrick O'Connor and Nicholas A. Bottini Griffiss AFB, N.Y.

RADC Oct. 1980 132 p refs

(Contract F30602-77-C-0065; AF Proj. 621H; AF Proj. 9137)

(AD-A096436; RADC-TR-80-323) Avail: NTIS

HC A07/MF A01 CSCL 09/2

The requirements, functional design and operational considerations of the AAIPS Charting, Air Facilities, and Publishing Subsystem are presented. The principal purpose of the three subsystems is the reduction of the labor (manual) required for the revision and republication of information critical to flight operations and logistical planning. Improvement of response time between receipt of changes to air navigation/air facilities data and the dissemination of new data to all users, is also provided. The Publishing Subsystem permits publications to be produced on electronic equipment and extends the power and flexibility of digital manipulation to the updating and reformatting of publications. T.M.

N81-26036# Arinc Research Corp., Annapolis, Md.

F-16 RELIABILITY IMPROVEMENT WARRANTY IMPLEMENTATION AND MANAGEMENT PLAN

G. Harrison May 1981 99 p

(Grant F09603-78-G-4125)

(AD-A099303; Rept-1565-21-1-2461)

Avail: NTIS

HC A05/MF A01 CSCL 15/5

The purpose of this Implementation and Management Plan (IMP) is to provide a complete and comprehensive document that describes the multiple features of the F-16 RIW program, defines the responsibilities for meeting the contractual provisions of the program, identifies the responsible participants, and establishes the procedures and interfaces required for its successful implementation and management. The objective of the IMP is to assist the MFP users in introducing the F-16 RIW items into their inventories with minimum disruption to existing logistic support procedures. Author (GRA)

N81-26125# General Accounting Office, Washington, D. C. **OPERATIONAL AND SUPPORT COSTS OF THE NAVY'S F/A-18 CAN BE SUBSTANTIALLY REDUCED Report to the Congress**

6 Jun. 1980 69 p ref

(PB81-160814; LCD-80-65) Avail: NTIS HC A04/MF A01

CSCL 01C

Cost reduction methods include: the use of multiport avionics test equipment; the consolidation of avionics repair facilities; the buying of initial spares concurrently with aircraft installed units; and a more effective use of pilot simulators. The consolidation of F/A-18 squadrons into larger size units is discussed. A reliability centered maintenance concept is presented that would determine the need for depot maintenance and pipeline aircraft. T.M.

N81-28786# TRW Defense and Space Systems Group, Redondo Beach, Calif.

AIRBORNE SYSTEMS SOFTWARE ACQUISITION ENGINEERING GUIDEBOOK FOR CONTRACTING FOR SOFTWARE ACQUISITION Final Report

R. Agnos Aug. 1980 69 p

(Contract F33657-76-C-0677; AF Proj. 2238)

(AD-A100217; TRW-30323-6007-TU-00; ASD-TR-80-5024)

Avail: NTIS HC A04/MF A01 CSCL 09/2

This report is one of a series of guidebooks whose purpose is to assist Air Force Program Office and Engineering personnel in the acquisition of weapon systems containing software. This guidebook provides information about the technicalities of DOD contracting to enable Program Office and Software Engineering personnel to effectively work the Procuring Contracting Officer (PCO) and other members of the acquisition team. Author (GRA)

N81-28787# TRW Defense and Space Systems Group, Redondo Beach, Calif.

AIRBORNE SYSTEMS SOFTWARE ACQUISITION ENGINEERING GUIDEBOOK FOR APPLICATION AND USE OF THE GUIDEBOOKS (SERIES OVERVIEW) Final Report

L. Parriott Oct. 1980 55 p
(Contract F33657-76-C-0677; AF Proj. 2238)
(AD-A100216; TRW-30323-6003-TU-00; ASD-TR-80-5028)
Avail: NTIS HC A04/MF A01 CSCL 09/2

This guidebook serves as an introduction to the Airborne Systems Software Acquisition Engineering guidebook series which describes significant activities and events in the software acquisition life cycle of airborne embedded computer systems acquired within the framework of Air Force 800-series documents. This guidebook contains a brief description of the other fifteen guidebooks and discusses the application and use of the various guidebooks during the acquisition of embedded weapon system software. Author (GRA)

N81-28813# Texas Univ. at Arlington. Center for Cybernetics Studies.

MATHEMATICAL OPTIMIZATION: A SUCCESSFUL TOOL FOR LOGISTICS PROBLEMS

Fred Glover and Darwin Klingman Jan. 1981 24 p refs
Presented at the IFORS Conf., Hamburg, West Germany, 20-24 Jul. 1981 Prepared in cooperation with Colorado Univ., Boulder
(Contracts N00014-78-C-0222; N00014-75-C-0569)
(AD-A100456; CCS-392) Avail: NTIS HC A02/MF A01 CSCL 15/5

Recent developments in mathematical optimization are substantially enhancing the scope and power of logistics planning systems. Based on these advances, successful applications of sophisticated mathematical optimization logistics systems are occurring worldwide. This paper briefly discusses some of these applications and advances. Author (GRA)

N81-29297*# Martin Marietta Aerospace, Denver, Colo.

CONCEPTUAL DESIGN AND ANALYSIS OF ORBITAL CRYOGENIC LIQUID STORAGE AND SUPPLY SYSTEMS Final Report, Dec. 1979 - Mar. 1981

Ralph N. Eberhardt, G. R. Cunningham, and William A. Johns May 1981 298 p refs
(Contract NAS3-22264)
(NASA-CR-165321; AD-A100846; MCR-81-546) Avail: NTIS HC A13/MF A01 CSCL 22/2

A wide variety of orbital cryogenic liquid storage and supply systems are defined in NASA and DOD long-range plans. These systems include small cooling applications, large chemical and electrical orbit transfer vehicles and resupply tankers. All have the common requirements of low-g fluid management to accomplish gas-free liquid expulsion and efficient thermal control to manage heat leak and tank pressure. A preliminary design study was performed to evaluate tanks ranging from 0.6 to 37.4 cu. 3 (22 to 1320 cu. ft). Liquids of interest were hydrogen, oxygen, methane, argon and helium. Conceptual designs were generated for each tank system and fluid dynamic, thermal and structural analyses were performed for Shuttle compatible operations. Design trades considered the paradox of conservative support structure and minimum thermal input. Orbital performance and weight data were developed, and a technology evaluation was completed. Author (GRA)

N81-30133# Rolls-Royce Ltd., Derby (England).

PROGRAMMES FOR MILITARY ENGINES WITH COST OBJECTIVES

Claude Fouré 1980 47 p Transl. into ENGLISH from French Conf. paper presented at AGARD Conf.
(PNR-90058; AGARD-LS-107; Trans-15261) Avail: NTIS HC A03/MF A01

Management techniques for military aircraft engine design, production and maintenance referred to cost objectives are

discussed. Life cycle cost, engine reliability, direct operating cost, purchasing cost, and the relationship between technical and cost objectives are examined. The techniques for cost forecasting are reviewed. The type of organization suited to follow both technical and cost objectives is analyzed. A maintenance method called Individually Repaired Subassemblies is detailed. The maintenance studies done for the Larzac aircraft fleet are presented. The spectrometric analysis of oil, particle analysis, vibration analysis, gammagraphy and endoscopy as maintenance techniques are also discussed. Author (ESA)

N81-31210*# Air Force Systems Command, Wright-Patterson AFB, Ohio.

F100 ENGINE DIAGNOSTIC SYSTEM STATUS TO DATE
James A. Boyless / In NASA. Lewis Res. Center Aircraft Engine Diagnostics 1981 p 225-242

Avail: NTIS HC A17/MF A01 CSCL 21E

An engine diagnostic system, proposed for the F100 engine, was tested in five specially modified Tactical Air Command F-15 aircraft during a 16-month flight evaluation. After more than 3300 engine operating hours encompassing almost 900 flights during the flight evaluation, these aircraft provided a data base, still being analyzed, that has shown successful demonstration of the original functional characteristics. Four general design requirements, recording engine operating time/low cycle fatigue event detection, engine trim, and trend and performance data collection were demonstrated. Also, validation of maintenance actions taken and indicated needed maintenance were successfully demonstrated. J.M.S.

N81-33134# Air Force Inst. of Tech., Wright-Patterson AFB, Ohio. School of Systems and Logistics.

A STUDY OF THE FACTORS AFFECTING PRODUCTIVITY AT THE NAVAL AIR REWORK FACILITIES M.S. Thesis
Janice Allton and Stephen N. Bernard Jun. 1981 83 p refs
(AD-A103783; AFIT-LSSR-10-81) Avail: NTIS HC A05/MF A01 CSCL 05/1

The purpose of this study was to determine the factors affecting productivity at Naval Air Rework Facilities (NARFs). Specific points addressed were number and identity of factors, internal consistency and usefulness in predicting perceived productivity. A seventy-two item questionnaire was administered to a random sample of NARF production-line employees. Five hundred thirty-four cases were factor analyzed. Eleven factors extracted were discussed. Eight of these were used to develop a linear multiple regression model to predict perceived productivity. Approximately twenty percent of the variance in perceived productivity was predicted, with five independent variables (factors) work scheduling supervision, overtime, training quality and equipment. These factors generally substantiated those found in current literature. Author (GRA)

N81-33135# Air Force Inst. of Tech., Wright-Patterson AFB, Ohio. School of Systems and Logistics.

A PRESCRIPTIVE MODEL FOR RESOURCE ALLOCATION AT THE INTERMEDIATE LEVEL ENGINE FACILITY M.S. Thesis

Edward Connolly and Charlie D. Johnson Jun. 1981 91 p refs
(AD-A103785; AFIT-LSSR-26-81) Avail: NTIS HC A05/MF A01 CSCL 15/5

Inability to support spare engine requirements has a critical impact on this nation's ability to meet its worldwide commitments during a crisis. This study examined those factors that significantly affect the intermediate level Propulsion Branch's ability to provide a steady supply of spare engines. Through simulation modeling and analysis, four factors were identified as driving the Base Repair Cycle time: spare parts, repair equipment, manpower, and experience level. A decision support system was developed which enables most users to assess the influence on repair cycle time of additional funding levels in specific factor areas. Author (GRA)

N81-33136# Boeing Aerospace Co., Seattle, Wash. Product Support/Experience Analysis Center.

DEVELOPMENT OF MAINTENANCE METRICS TO FORECAST RESOURCE DEMANDS OF WEAPON SYSTEMS Final Report, 1 Mar. 1978 - 1 Oct. 1980

Donald K. Hindes, Gary A. Walker, and David H. Wilson

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Wright-Patterson AFB, Ohio Air Force Human Resources Lab.
Oct. 1980 154 p refs
(Contract F33615-77-C-0075)
(AD-A104089; D194-10089-5) Avail: NTIS
HC A08/MF A01 CSCL 05/1

This report describes the methodology and results of a 32 month effort to 'Develop Maintenance Metrics To Forecast Resource Demands of Weapon Systems'. Increased concern with the rising cost to support weapon systems currently in operation, as well as those in development, has created the need for more accurate methods of projecting maintenance requirements. The objective of this subject research was to alleviate the above need by identifying, determining, and integrating those measurable weapon system parameters which are necessary and sufficient to predict and quantify the drivers of maintenance resource demands. Phase 1 investigated and developed new maintenance metrics for aircraft propulsion and avionics. Phase 1 results were then reviewed for overall success and applicability before proceeding with Phase 2 efforts. Initial results were acceptable so Phase 2 of the study was initiated to develop metrics for the rest of the subsystems commonly included in Air Force aircraft. This document is the final report of a series of five technical reports published during the study. It is intended to be a summary overview of the study project and an application guide for potential users of the developed metrics methodology. Study findings include: (1) Review of published literature; (2) Critical equipment selection; (3) Maintenance impact parameter identification; (4) Data base assembly and integration; (5) Maintenance impact estimating relationship detection and analysis; (6) Maintenance metric model development; and (7) Maintenance metrics validation. GRA

N81-34058# Army Inventory Research Office, Philadelphia, Pa.
SUPPLY CONTROL STUDY INSTABILITY Final Report
Bernard B. Rosenman Jun. 1981 25 p refs
(AD-A103895; IRO-285) Avail: NTIS HC A02/MF A01 CSCL 05/1

This report deals with instabilities in computer-recommended supply actions in successive supply control studies where the recommended action can change from buy to cutback, cutback to buy, etc., from one study to the next. Statistics are given on the magnitude of the problem at the DARCOM MRCs and on most frequently encountered causes. Some recommendations to improve the situation are given. Author (GRA)

N81-34070# Logistics Management Inst., Washington, D. C.
**DEFENSE ENERGY INFORMATION SYSTEM (DEIS):
DEIS-80 DESIGN SYSTEM SPECIFICATION, REVISION A**
Joan Lengel Jul. 1981 220 p
(Contract MDA903-81-C-0253)
(AD-A104016; LMI-DP103) Avail: NTIS HC A10/MF A01 CSCL 15/5

The Defense Energy Information System (DEIS) is a worldwide, automated, energy management information system. It provides data on petroleum products used as mobility fuels by the military departments as well as most energy sources used for utility services at DoD installations. DEIS consists of two related information systems. DEIS I reports the disposition and consumption of petroleum products, notably aviation gasoline, jet fuels, motor gasoline, distillate and residual oils within DoD. DEIS II reports the consumption of utility energy, such as electricity, natural gas, purchased steam/hot water, fuel oil and coal. It reports the consumption and generation of energy from renewable sources. This document presents the System Specification for the enhanced DEIS (DEIS-80). As specified, DEIS-80 improves the utility of the existing system by including additional data, supporting management queries of the DEIS-80 data bases on-line, and providing the capability for automated data analysis. Since the publication of the DEIS-80 specifications in August 1980, several design features have been identified that required clarification and modification. The design System Specification will continue to serve as the guide for the computer programming of DEIS-80. It adheres to the requirement for system specification in the Automated Data System Documentation Standards. Author (GRA)

URBAN TECHNOLOGY AND TRANSPORTATION MANAGEMENT

Includes municipal water and waste treatment, rapid transit, and urban planning.

A81-25225 **Design and management for resource recovery. Volume 2 - High technology - A failure analysis.** B. Harrison and P. A. Vesilind (Duke University, Durham, N.C.). Ann Arbor, Mich., Ann Arbor Science Publishers, Inc., 1980. 107 p. 100 refs. \$29.95.

The book examines five projects for reclaiming materials and energy from solid waste with the aim of investigating their planning, design, and operation and of determining factors which result in failures or successful resource recovery. The facilities discussed are the Nashville Thermal Transfer Corporation plant, the St. Louis Union Electric solid waste utilization system proposal, the Baltimore pyrolysis system, the Lowell incinerator residue project, and the San Diego flash pyrolysis system. It was shown that the major factors affecting the operation of a recovery system include area markets, initial funding, technical viability, waste flow control, alternate disposal possibilities, and time pressure. A.T.

A81-39047 **The role of technology in urban transportation - Barriers to technology deployment.** C. G. Burke (Southern California, University, Los Angeles, CA). (*Transportation Research Board, Annual Meeting, 60th, Washington, DC, Jan. 12-16, 1981.*) *Journal of Advanced Transportation*, vol. 15, Spring 1981, p. 1-20. 15 refs.

The organization and innovation of new technology to the urban public transportation system is offset by three interrelated problems. First, there is a fundamental misunderstanding of the nature of technology and the innovative process. The critical issues of innovation are social and political, and not technical or scientific. Changes in technology require changes in organizational set-ups, and its consequences affect different groups at varying degrees of penetration. Penetration to the third level of depth, considered a 'restructuring' innovation, can usually be prevented by most organizations. Second, functional subsystems in the institutional framework are commissioned to appraise these innovations, causing them to be held up at many jurisdictional boundaries. The transit system today is handled like a connection of geographic places (corridor), rather than a facility to connect people (network), and the interests that support a change are small, weak, and divided. Finally, the market is dominated by the federal government, whose resources are substantial enough to initiate changes in public transit. The existing transit paradigm is failing, however, and changes may be fostered for decentralized systems, private entrepreneurship, and/or long-term federal support to create markets. J.F.

N81-13812# **CONSAD Research Corp., Pittsburgh, Pa. METHODOLOGY FOR THE EVALUATION OF THE URBAN TECHNOLOGY SYSTEM. EXECUTIVE SUMMARY** Samuel I. Doctors Dec. 1979 37 p (Grant NSF ISP-78-27101) (PB80-209950: NSF/RA-800108) Avail: NTIS HC A03/MF A01 CSCL 05A

The methodology for an evaluation of an urban technology development system (UTS) is described which would: (1) assess to what extent, how, and why the original objectives of the UTS system were achieved; (2) provide policy relevant information to a variety of audiences to help them decide whether or not to participate in, or otherwise support, the UTS or similar systems; and (3) provide information to existing UTS participants to help them strengthen their operations. The sources used for evaluation data are itemized as are products of the evaluation. Resource requirements and scheduling are indicated. Procedures for addressing potential problems cover questions on representatives of test and control sites, loss of data through turnover and lack of documentation, nonresponding governments and organizations, and minimizing the respondent load. GRA

N81-13813# **CONSAD Research Corp., Pittsburgh, Pa. EVALUATION OF THE EXPERIMENTAL PHASE OF THE URBAN TECHNOLOGY SYSTEM. WORKING ANNOTATED**

BIBLIOGRAPHY

Jan. 1980 27 p
(Grant NSF ISP-78-27101)
(PB80-208283: NSF/RA-800112) Avail: NTIS
HC A03/MF A01 CSCL 05B

The bibliography of publications pertinent to the Urban Technology System (UTS) comprises two parts: articles in journals and other collections, and books and monographs. Items are listed alphabetically by author, and each includes an abstract. UTS was designed to promote technological innovation in cities and urban counties with populations of 50,000-500,000, and case studies of innovation in participating sites. UTS involved assigning a Technology Agent to a city manager, mayor, or equivalent county official to provide expertise to help solve a variety of public problems. The expertise was scientific or technological and involved managerial, administrative planning, or analytical skills. GRA

N81-14481# **Midwest Research Inst., Golden, Colo. COMMUNITY ENERGY SELF-RELIANCE**

Jul. 1980 568 p refs Presented at Community Renewable Energy Sys. Conf., Boulder, 20 Aug. 1979 (Contract DE-AC02-77CH-00178) (SERI/CP-354-421: CONF-790864) Avail: NTIS HC A24/MF A01

Goals of a workshop/conference on community renewable energy systems are: (1) to encourage decentralization in attacking energy problems, (2) to show how renewable energy can meet community goals, (3) to present examples of successful projects, (4) to discuss the planning and management of renewable energy systems, (5) to identify sources of financial support, (6) to share legal strategies, and (7) to examine utility roles. DOE

N81-14931# **Institute of Gas Technology, Chicago, Ill. URBAN WASTE CONVERSION SYSTEMS Final Report, 1 Oct. 1978 - 31 Mar. 1979**

D. S. Cowen, Edward J. Daniels, and Martin Novil Feb. 1980 72 p refs (Contract EI-78-X-01-5580) (DSE-5580-T1) Avail: NTIS HC A04/MF A01

The market potential of the various systems available, or under development, for converting urban wastes into synthetic gas or liquids was assessed and the primary data base for this assessment is a survey which IGT has sent out to experts in this field. The experts were asked to evaluate various conversion systems by assigning point totals to an evaluation matrix. They were also asked to summarize their work in urban waste conversion, critical paths which represent obstacles to be surmounted by R & D were identified. These included materials handling and separation techniques, and protection of equipment from abrasive, caustic, or corrosive chemicals in the wastes. Prohibitive capital and operating costs in some existing systems were cited, since investor confidence is eroded by evidence of such experiences. Downtime was excessive with many systems, stemming from feed problems brought on by the heterogeneous nature of the feedstock. Systems using homogeneous feeds show considerably fewer problems. DOE

N81-16958# **Argonne National Lab., Ill. Transportation Energy Systems Sect.**

TECHNOLOGY ASSESSMENTS IN TRANSPORTATION: SURVEY OF RECENT LITERATURE

Sarah J. LaBelle Mar. 1980 245 p refs (Contract W-31-109-eng-38) (ANL/CNSV-TM-44) Avail: NTIS HC A11/MF A01

A survey and an evaluation of recent studies of transportation systems done in a technology assessment framework were undertaken as the basis for a detailed statement for a technology assessment of transportation energy conservation strategies. Several bibliographies were searched and numerous professionals in the field of technology assessment were contacted regarding current work. Detailed abstracts were prepared for studies judged to be sufficiently broad in coverage of impacts assessed, yet detailed in coverage of all or part of the nation's transportation systems. Some studies were rich in data but not comprehensive in their analytical approach; brief abstracts were prepared for these. An explanation of the criteria used to screen the studies, as well as abstracts of 37 reports, are provided in this compendium of transportation technology assessment literature. Author

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N81-17588# Argonne National Lab., Ill.
COMMUNITY ENERGY AUDITING: EXPERIENCE WITH THE COMPREHENSIVE COMMUNITY ENERGY MANAGEMENT PROGRAM

J. L. Moore, D. A. Berger, C. B. Rubin, P. A. Hutchinson, Sr., and H. M. Griggs Sep. 1980 107 p refs
(Contract W-31-109-eng-38)
(ANL/CNSV/TM-43) Avail: NTIS HC A06/MF A01

The evaluation issues and key findings based on the communities' experiences from Spring of 1979 to approximately March of 1980 are presented. An organized review of experience of communities in applying the detailed audit methodology for estimating current community energy consumption and projecting future consumption and supply is presented. A preliminary assessment of how audit information is being used in other CCEMP tasks is provided. DOE

N81-17965# M and I, Inc., Fort Collins, Colo.
EVALUATION OF OPERATION AND MAINTENANCE FACTORS LIMITING MUNICIPAL WASTE WATER TREATMENT PLANT PERFORMANCE, PHASE 2 Final Report, Oct. 1977 - Apr. 1979

Bob A. Hegg, Kerwin L. Rakness, James R. Schultz, and Larry D. DeMers Aug. 1980 171 p refs
(Contract EPA-68-03-2572)
(PB81-112864; EPA-600/2-80-129) Avail: NTIS HC A08/MF A01 CSCL 13B

The identified highest ranking causes of limited plant performance reflect an inability of plant personnel to optimize process control and the performance of existing facilities. Deficiencies in design features also ranked high. The Composite Correction Program (CCP) was introduced and demonstrated. This approach to improving the performance of existing facilities was conducted at selected facilities. Areas of special evaluation include aerator and clarifier design, sludge production in activated sludge plants, aerobic digestion operation, reference materials used in treatment plants, operator time and tasks before and after a CCP, and the effects of toxic substances on well operated treatment facilities. GRA

N81-18936# Jet Propulsion Lab., California Inst. of Tech., Pasadena.

OVERVIEW OF RAIL TRANSIT FARE COLLECTION Final Report

Louis D. Rubenstein, James E. Land, Govind Deshpande, and Barry Harrow Aug. 1980 150 p refs
(Contract DOT-AT-80015)
(JPL-PUB-80-89; UMTA-CA-06-0116-80-1) Avail: NTIS HC A07/MF A01

The performance of rail transit fare collection equipment was assessed. Options in fare collection were illustrated by examining four transit systems. Reliability data, in terms of transactions per failure, were gathered for elements of these systems. Detailed investigations and subsystems failure analyses were conducted for two graduated, distance related fare systems. Several models were developed for evaluating the impact of equipment reliability on operating costs and passenger delays. The models utilized the binomial probability distribution to calculate the incidence of simultaneous machine failures as a parameter in multiserver queueing and delay frequency models. Significant findings were that the reliability of distance related fare collection equipment could be improved by: (1) using procurement methods appropriate for development contracts; (2) reducing desirable but nonessential functional requirements in specifications; (3) providing more precise descriptions of field operating environments; and (4) use of reliability criteria that distinguish between component replacement and the clearing of temporary blockages. It was also found that fare collection operating and maintenance costs account for 7 to 31 percent of revenues collected. J.M.S.

N81-19968*# National Aeronautics and Space Administration, Goddard Space Flight Center, Greenbelt, Md.
THE NASA/BALTIMORE APPLICATIONS PROJECT: AN EXPERIMENT IN TECHNOLOGY TRANSFER

Thomas S. Golden Mar. 1981 29 p refs Presented at Ann. Meeting for the Advancement of Sci., San Francisco, Jan. 1980 (NASA-TM-82110) Avail: NTIS HC A03/MF A01 CSCL 05A

Conclusions drawn from the experiment thus far are presented. The problems of a large city most often do not require highly

sophisticated solutions; the simpler the solution, the better. A problem focused approach is a greater help to the city than a product focused approach. Most problem situations involve several individuals or organized groups within the city. Mutual trust and good interpersonal relationships between the technologist and the administrator is as important for solving problems as technological know-how. E.D.K.

N81-19974# Brookings Institution, Washington, D. C.
CASE STUDIES OF THE IMPACT OF FEDERAL AID ON MAJOR CITIES, CITY OF BOSTON. THE IMPACT OF FEDERAL GRANTS ON BOSTON IN 1978. FEDERAL AID CASE STUDIES SERIES PAPER NO. 7 Final Report

Jonathan D. Katz (Brandeis Univ.) Oct. 1980 96 p refs
Sponsored in part by Dept. of Commerce
(Grant DOL-23-11-77-03)
(PB81-121121; MEL-80-15) Avail: NTIS HC A05/MF A01 CSCL 13B

Federal aid to Boston in fiscal 1978 had several important effects on the city government's fiscal position and its work force, on public and private investment in the city's economy. Among the most important and most immediate effects were those of the economic stimulus package, which combined direct fiscal aid, public service jobs, and public works. These programs gave Boston a psychological and financial boost. They helped the city stabilize an extremely high property tax rate while maintaining, and in some cases expanding, city services. GRA

N81-21979# Purdue Univ., Lafayette, Ind. Water Resources Research Center.

LEAST COST DESIGN OF URBAN DRAINAGE SYSTEMS
Ji Han, A. Ramachandra Rao, and Mark H. Houck Sep. 1980 133 p refs

(Contract DI-14-34-0001-8016)
(PB81-131104; PWRR-TR-138; OWRT-A-056-IND(2)) Avail: NTIS HC A07/MF A01 CSCL 08H

An urban hydrologic model is developed which gives a least cost design for an urban drainage system. Unlike many such models, the model reported provides for inflow rates estimated by the use of an adequate performing hydrologic model. A simple, readily usable, and theoretically sound model and a dynamic programming subroutine was developed. The model was used to investigate the variation of systems costs with the variation in design parameters and to optimally size the detention storage volume for the least cost of the system. GRA

N81-21981# Economica, Inc., Tarrytown, N. Y.
URBAN IMPACT METHODOLOGY Final Report

Stanley L. Friedlander Oct. 1980 225 p refs
(Contract EDA-ED-79-SA-00018; Grant EDA-99-7-13473)
(PB81-142614; EDA-ERD-81-004) Avail: NTIS HC A10/MF A01 CSCL 05C

A review of the current literature of urban impact analysis is included. Methodologies for conducting urban impact analysis and a set of recommendations are detailed concerning the appropriateness and feasibility of applying these methodologies in assessing the urban impact of (1) the Long Term Economic Deterioration Program Title IX of the Public Works and Economic Development Act of 1965, as amended, and (2) the proposed National Development Bank. GRA

N81-23737# California Univ., Berkeley.
POLICY OPTIONS FOR THE TRANSPORTATION-AIR-QUALITY PROCESS Interim Report

Elizabeth Deakin, Greig Harvey, and David Calkins Sep. 1980 33 p refs Sponsored by National Commission on Air Quality (PB81-150914; AQ-7919-16A) Avail: NTIS HC A03/MF A01 CSCL 13B

The various policy options for future transportation and air quality program integration are described. The options are derived from previous work performed as part of this study (literature reviews, discussions with government environmental, business, academic, and transportation research experts, and case studies in Milwaukee, Dallas, Fort Worth, and the San Francisco Bay area). The sections of the Clean Air Act (CAA) addressed include those dealing with transportation planning and funding (Sec. 174 and 175) and Title 1, Part D requirements for nonattainment areas. GRA

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N81-23975* Jet Propulsion Lab., California Inst. of Tech., Pasadena.

METHODOLOGY FOR URBAN RAIL AND CONSTRUCTION TECHNOLOGY RESEARCH AND DEVELOPMENT PLANNING Final Report

Louis D. Rubenstein, James E. Land, Govind Deshpande, Bain Dayman, and Eugene H. Warren 1 Aug. 1980 163 p refs Sponsored in part by DOT

(Contracts NAS7-100; DOT-AT-800015)

(NASA-CR-164280; JPL-Pub-80-83; UMTA-CA-06-0116-80-3)

Avail: NTIS HC A08/MF A01 CSCL 13F

A series of transit system visits, organized by the American Public Transit Association (APTA), was conducted in which the system operators identified the most pressing development needs. These varied by property and were reformulated into a series of potential projects. To assist in the evaluation, a data base useful for estimating the present capital and operating costs of various transit system elements was generated from published data. An evaluation model was developed which considered the rate of deployment of the research and development project, potential benefits, development time and cost. An outline of an evaluation methodology that considered benefits other than capital and operating cost savings was also presented. During the course of the study, five candidate projects were selected for detailed investigation: (1) air comfort systems; (2) solid state auxiliary power conditioners; (3) door systems; (4) escalators; and (5) fare collection systems. Application of the evaluation model to these five examples showed the usefulness of modeling deployment rates and indicated a need to increase the scope of the model to quantitatively consider reliability impacts. S.F.

N81-23982# Abcor, Inc., Wilmington, Mass. Walden Div. EVALUATION OF HOT ACID TREATMENT FOR MUNICIPAL SLUDGE CONDITIONING Final Report

Kenneth J. McNulty, Ann T. Malarkey, Robert L. Goldsmith, and Henry A. Fremont (Champion International Corp.) Aug. 1980 178 p refs

(Contract EPA-68-03-2459)

(PB81-144446; EPA-600/2-80-096)

Avail: NTIS

HC A09/MF A01 CSCL 13B

Bench scale tests were conducted to evaluate the technical and economic feasibility of the hot acid process for stabilization/conditioning of municipal sewage sludge. This process involves acidification of the sludge (pH 1.5-3) and heating to temperatures below boiling (approximately equal to C). The process improves the dewaterability of the sludge, destroys essentially all pathogens, and preferentially solubilizes certain heavy metals relative to nitrogen and organics. The process demonstrated the potential for good solubilization and removal of toxic heavy metals including cadmium, zinc, and nickel with minimal solubilization of nitrogen. GRA

N81-24992*# National Aeronautics and Space Administration, Washington, D. C. EFFECTS OF STREET TRAFFIC NOISE IN THE NIGHT

Brigit Wehrli, J. Namecek, V. Turrian, R. Hoffman, and H. Wanner Mar. 1980 31 p refs Transl. into ENGLISH from Kampf der Laerm, v. 25, 1978 p 138-149 Transl. by Kanner (Leo) Associates, Redwood City, Calif. Original doc. prep. by Inst. for Hygiene and Work Physiology of ETH

(Contract NASw-3199)

(NASA-TM-75495) Avail: NTIS HC A03/MF A01 CSCL 13B

The relationship between automobile traffic noise and the degree of disturbance experience experienced at night was explored through a random sample survey of 1600 individuals in rural and urban areas. The data obtained were used to establish threshold values. A.R.H.

N81-24996# Max-Planck-Institut fuer Stroemungsforschung, Goettingen (West Germany). FURTHER EXPERIMENTS ON THE CLEANING OF SEWER PIPES WITH THE HELP OF SPHERES

A. Dinkelacker Feb. 1980 79 p refs In GERMAN; ENGLISH summary

(MPIS-2/1980; ISSN-0436-1199)

Avail: NTIS

HC A05/MF A01

The spheres are moved through the pipes by the flow of the sewage. The experiments were performed with spheres of

0.56 m diameter in sewer pipes of 1.40 m diameter. Normal flow and mud conditions existed in the pipes during the experiments. Results show that a remarkable cleaning effect is achieved due to the action of the spheres. After two days of application of spheres the thickness of the sedimented mud layer decreased from 12 cm to 7 cm. This decrease corresponds to a removal of 60 kg of mud per meter of pipe length.

Author (ESA)

N81-24998# Battelle Southern Operations, Atlanta, Ga. REPLICATION AND EVALUATION OF SELECTED INNOVATIONS DEVELOPED WITHIN THE URBAN TECHNOLOGY SYSTEM. REPORT 1: PROJECT HISTORY, EVALUATION AND RECOMMENDATIONS Final Report

J. Mercer 1980 41 p

(Grant NSF ISP-77-13029)

(PB81-134736; NSF/RA-800260; Rept-1) Avail: NTIS

HC A03/MF A01; Also available in set of 3 reports HC E08

as PB81-134728-SET CSCL 05A

The results of a research project on the replication of innovations developed within the urban technology system are presented. The system is a nationwide technology transfer network which was initiated to test factors associated with the stimulation of innovation in local government operations. A historical description of the project structure is given and observations and lessons learned about the replication process are discussed. The barriers and facilitators related to the replication of innovations are also described. Various aspects of projects utilization, project evaluation, and recommendations for future research reported. R.C.T.

N81-24999# Battelle Southern Operations, Atlanta, Ga. REPLICATION AND EVALUATION OF SELECTED INNOVATIONS DEVELOPED WITHIN THE URBAN TECHNOLOGY SYSTEM. REPORT 2: CASE STUDIES Final Report

J. Mercer 1980 32 p 3 Vol.

(Grant NSF ISP-77-13029)

(PB81-134744; NSF/RA-800261; Rept-2) Avail: NTIS

HC A03/MF A01; Also available in set of 3 reports HC E08 as

PB81-134728-SET CSCL 05A

Case studies are presented which illustrate the transfer of three innovations to six local government jurisdictions. The following combinations are evaluated: project control system to Lincoln, Nebraska and East Point, Georgia; solar hot water heating to Middletown, Ohio and Austin, Texas; and telephone cost control to Denton, Texas and Chesterfield County, Virginia. GRA

N81-25000# Battelle Southern Operations, Atlanta, Ga. REPLICATION AND EVALUATION OF SELECTED INNOVATIONS DEVELOPED WITHIN THE URBAN TECHNOLOGY SYSTEM. REPORT 3: TECHNOLOGY REPLICATION PACKAGES Final Report

J. Mercer Mar. 1980 84 p

(Grant NSF ISP-77-13029)

(PB81-134751; NSF/RA-800262; Rept-3) Avail: NTIS

HC A05/MF A01; Also available in set of 3 reports HC E08

as PB81-134728-SET CSCL 05A

Three replication projects developed by the urban technology system are reported: telephone cost control innovations for implementation; solar hot water heating; and project control systems. Overall objectives of these projects are the evaluation and replication of selected innovations in local government service delivery and a determination of critical factors which enhance or impede the replication process. The solar heating package is structured to provide guidelines for implementing solar hot water heating in public housing. The project control system replication package discusses schedules reports, and monitoring system involved project control and suggested procedure for implementing a project control system. GRA

N81-25001# Boeing Co., Seattle, Wash. Automated Transportation Systems. MORGANTOWN PEOPLE MOVER ELECTROMAGNETIC COMPATIBILITY PROGRAM Final Report

T. H. Herring Sep. 1980 107 p

(Contract MA-06-0048)

(PB81-148082; DOT-TSC-UMTA-80-35;

UMTA-MA-06-0048-80-10) Avail: NTIS HC A06/MF A01

CSCL 13F

Electromagnetic Compatibility (EMC) of a transit system is

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the absence of interference between all parts of the system, and between the system and the community which it serves. The EMC experience obtained during the design and development of the Morgantown People Mover (MPM) system in Morgantown, West Virginia addresses background regarding the development of the MPM system and its current configuration as well as discussions pertaining to EMC. Conceptual and practical EMC requirement considerations and descriptions of the resulting requirements are presented. The analysis and testing performed to verify EMC is outlined and EMC problems unique to MPM are detailed. GRA

N81-25002# Boeing Co., Seattle, Wash. Automated Transportation Systems.

MORGANTOWN PEOPLE MOVER REDUNDANT COMPUTING SYSTEM DESIGN SUMMARY Final Report

Jim I. Rucker and Bert J. Hill Sep. 1980 159 p

(Contract MA-06-0048)

(PB81-151367; DOT-TSC-UMTA-80-36;

UMTA-MA-06-0048-80-8; DTS-723)

Avail: NTIS

HC A08/MF A01 CSCL 13F

The redundant computing system design used for the current 1980 Phase 1 Morgantown People Mover (MPM) system is described. The redundant computing system is that part of the control and communications system (C&CS) consisting of redundant computer hardware and software and the special purpose equipment (SPE) used to interface the dual computing system to the rest of the C&CS system. The Morgantown project, which began in 1969, is an Urban Mass Transportation Administration program that provides a personal rapid transit system between the central business district of Morgantown, West Virginia, and the widely separated campuses of West Virginia University. The MPM system is an automated, two mode (schedule and demand) transit system that consists of a fleet of electrically powered, rubber tired, passenger carrying vehicles operating on a dedicated guideway network under the redundant computing system computer control. GRA

N81-25877*# Levine (Arthur L.), New York, N.Y.

THE NASA/BALTIMORE APPLICATIONS PROJECT (BAP). COMPUTER AIDED DISPATCH AND COMMUNICATIONS SYSTEM FOR THE BALTIMORE FIRE DEPARTMENT: A CASE STUDY OF URBAN TECHNOLOGY APPLICATION

Arthur L. Levine Jan. 1981 34 p refs

(NASA Order S-66151-B)

(NASA-CR-166662) Avail: NTIS HC A03/MF A01 CSCL 05K

An engineer and a computer expert from Goddard Space Flight Center were assigned to provide technical assistance in the design and installation of a computer assisted system for dispatching and communicating with fire department personnel and equipment in Baltimore City. Primary contributions were in decision making and management processes. The project is analyzed from four perspectives: (1) fire service; (2) technology transfer; (3) public administration; and (5) innovation. The city benefitted substantially from the approach and competence of the NASA personnel. Given the proper conditions, there are distinct advantages in having a nearby Federal laboratory provide assistance to a city on a continuing basis, as is done in the Baltimore Applications Project. A.R.H.

N81-25878# Public Technology, Inc., Washington, D. C.

PRIMARY URBAN ENERGY-MANAGEMENT-PLANNING METHODOLOGY, A MANAGEMENT REPORT

Nov. 1980 36 p Prepared jointly with Office of Energy Management, Dade County, Fla.; Joint Center for Environmental and Urban Problems, Miami; New York City Energy Office, N.Y.; Cooper Union, New York, N.Y.

(DOE/IR-05106/1) Avail: NTIS HC A03/MF A01

A Primary Urban Energy Management Planning Methodology, which provides local governments with the systematic approach for dealing with short and intermediate term urban energy management problems while at the same time laying the groundwork for the formulation of long term energy management activities, is described. The five tasks of the methodology are: organizing; performing an energy use and supply inventory; formulating energy management goals and objectives; developing strategies to achieve the energy management objectives; and monitoring and evaluation. DOE

N81-25882# Washington Univ., Seattle. Dept. of Civil Engineering.

PLANNING AND DESIGNING A TRANSIT CENTER BASED TRANSIT SYSTEM: GUIDELINES AND EXAMPLES FROM CASE STUDIES IN TWENTY TWO CITIES

Jerry B. Schneider, Stephen P. Smith, Paul D. Thompson, James L. Heid, and Irene W. Ng Sep. 1980 133 p refs

(PB81-154569; UMTA-WA-11-007-81-1; UPP-30) Avail: NTIS HC A07/MF A01 CSCL 13F

Present metropolitan level patterns in American cities are examined. The inability of high downtown focused transit networks to meet metropolitan travel needs in American cities is discussed. In addition, the grid network approach to route planning is critiqued. A planning framework consisting of 10 steps and designed to aid planners design transit centers is presented. Each step of the process is illustrated with examples from 22 case studies which include four Canadian, one Indian, and one West German city. Regional shopping centers are suggested to be ideal sites for transit center locations. The transit center oriented network is assessed critically from an operational, financial, and political perspective. GRA

N81-25883# General Motors Technical Center, Warren, Mich. Transportation Systems Div.

SYSTEMS OPERATION STUDIES FOR AUTOMATED GUIDEWAY TRANSIT SYSTEMS: REPRESENTATION APPLICATION AREAS FOR AGT Final Report, Nov. 1978 - May 1980

Robert W. Cowan, Loren S. Bonderson, and Femia S. A. Alberts Nov. 1980 223 p refs

(Contract DOT-TSC-1220)

(PB81-154551; DOT-TSC-UMTA-80-30;

UMTA-MA-06-0048-80-7) Avail: NTIS HC A10/MF A01 CSCL 13F

Travel demands and guideway networks are defined for a set of representative automated guideway transit (AGT) system deployments. These demands and networks, when combined with detailed descriptions of the systems and their operating characteristics, define the representative systems to be modeled and analyzed. Seven demand types, including three metropolitan areas, two central business districts, and two activity centers are defined, and a representative locale of each type is chosen. Station-to-station demands generated after the process for generating zone-to-zone demands for the metropolitan area applications are also presented. The following seven guideway network types are defined: shuttle; loop; one-way loop; two-way loop; multiple loop; partially connected grid; and fully connected grid. GRA

N81-26307# Transportation Research Board, Washington, D.C. **PROCEEDINGS OF THE NATIONAL SEMINAR ON ASPHALT PAVEMENT RECYCLING: TRANSPORTATION RESEARCH RECORD 780**

1980 153 p refs

(PB81-162711; TRB/TRR-780; ISBN-0-309-03101-X;

LC-80-607072) Avail: NTIS HC A08/MF A01; HC also available from Transportation Research Board, 2101 Constitution Ave., N.W., Washington, D.C. 20418 CSCL 13C

The economics of asphalt pavement recycling are presented. The costs, energy requirements, and specifications for project selection are discussed. Surface recycling is considered. The state of the art of both cold and hot recycling is presented, and equipment needs are discussed. The method of hot urban recycling used in Denver, Colorado, is reviewed. Special consideration is given to the differing requirements and circumstances of recycling under rural and urban conditions. Quality control of recycled asphalt concrete mixtures is discussed. Air pollution control for asphalt pavement recycling is considered. J.D.H.

N81-27689# Transportation Research Board, Washington, D.C. **TRANSPORTATION ENERGY: DATA, FORECASTING, POLICY, AND MODELS**

Michael Morris, Antti Talvitie, David T. Hartgen, Nathan S.

Erlbaum, Martin E. H. Lee, Matthew F. Glover, Donald A. Maxwell,

Dennis V. Williamson, Nancy S. Dorfman, and Ian E. Harrington

1980 118 p refs

(PB81-172579; TRB/TRR-764; ISBN-0-309-03107-9;

ISSN-0361-1981; LC-81-1665) Avail: NTIS HC A06/MF A01

Paper Copy also avail: Transportation Res. Board, 2101

Constitution Ave., N.W., Washington, D.C. 20418 CSCL 10A

The 16 papers in this report deal with the following:

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assessment of energy and petroleum consumption of different transportation modes in the Buffalo area; long range forecasts of transportation energy consumption in New York state; use of disaggregate data to evaluate gasoline conservation policies; evaluating the costs and benefits of plans to reduce gasoline queues; review of analytical models of gasoline demand during an energy emergency; direct energy accounts for urban transportation planning; transportation energy effects on urban growth; travel demand and estimation of energy consumption by a constrained model; and transportation system management actions a study of the energy costs. GRA

N81-27981# SRI International Corp., Menlo Park, Calif.
TECHNOLOGY TRANSFER: TRANSPORTATION Annual Report, 1 Jan. 1978 - 31 Dec. 1978
Tom Anyos, Lo Christy, Ruth Lizak, and James Wilhelm 31 Dec. 1978 98 p refs
(Contract NAS2-9846)
(NASA-CR-152673) Avail: NTIS HC A05/MF A01 CSCL 05A

The successful application of aerospace technology to problems related to highways and rail and rapid transit systems is described with emphasis on the use of corrosion resistant paints, fire retardant materials, and law enforcement. Possible areas for the use of spinoff from NASA technology by the California State Department of Corrections are identified. These include drug detection, security and warning systems, and the transportation and storage of food. A communication system for emergency services is also described. A.R.H.

N81-28590# Public Technology, Inc., Washington, D. C.
LOCAL GOVERNMENT GUIDE TO THE EMERGING TECHNOLOGIES OF COGENERATION AND PHOTOVOLTAICS. ENERGY TECHNOLOGY REPORT OF THE ENERGY TASK FORCE OF THE URBAN CONSORTIUM
1980 44 p refs Prepared in cooperation with Planning and Management Associates of Greater Washington, Inc., Washington, D. C.
(Contract DE-FG02-78JR-05106)
(DOE/IR-05106/T24) Avail: NTIS HC A03/MF A01

An overview of cogeneration and photovoltaic systems is presented to provide local government managers a basic understanding of the technologies. Issues and considerations associated with applications are presented. Discussions cover installation and maintenance requirements, equipment availability, costs, and risks/benefits. Data describing demonstration sites and contacts for further information are provided. DOE

N81-30322# Spangle (William) and Associates, Portola Valley, Calif.

LAND USE PLANNING AFTER EARTHQUAKES

George G. Mader, William E. Spangle, Martha L. Blair, Richard L. Meehan (Earth Sciences Associates), Sally W. Bilodeau (Earth Sciences Associates), Henry J. Degenkolb (Degenkolb (H. J.) and Associates), George S. Duggar (Degenkolb (H. J.) and Associates), and Norman Williams, Jr. (Degenkolb (H. J.) and Associates) 1980 185 p refs
(PB81-185936; NSF/RA-800303) Avail: NTIS HC A09/MF A01 CSCL 13B

Factors in post-earthquake land use planning which can effectively reduce further earthquake risk in urban areas were analyzed. A wide variety of responses to earthquake hazards was observed, ranging from a cavalier disregard for future risk, to a long term concerted effort to improve seismic safety. Effectiveness of land use planning in post-earthquake reconstruction is influenced by four major factors: (1) cause and extent of damage; (2) hazard and risk evaluation; (3) capabilities of local government to respond to an earthquake; and (4) role of the Federal government in post-earthquake decisions. GRA

N81-30619# Oak Ridge National Lab., Tenn. Energy Div.
LINK BETWEEN TRADITIONAL PLANNING AND ENERGY MANAGEMENT

M. Schweizer 1981 13 p refs Presented at the Community Energy Planning Conf., Gatlinburg, Tenn., 21-20 Jan. 1981; sponsored by the Tennessee Chapter of the American Planning Association and Tennessee Univ.
(Contract W-7405-eng-26)
(CONF-810140-1) Avail: NTIS HC A02/MF A01

Community energy planning is the process of envisioning a desired future state of energy supply and consumption for a local area and designing the appropriate measures to implement that future. While energy planning can be distinguished from other specialized concerns, such as housing or transportation planning, there are also major similarities which bind all these elements together. These similarities and differences are discussed. Community level energy planning represents a natural extension of the comprehensive planning process. As the comprehensive plan has grown in the past to reflect new subjects of public concern such as environmental quality and economic development, so it can evolve further to address society's growing interest in energy use. DOE

N81-32091# Ecosometrics, Inc., Bethesda, Md.
WISCONSIN MANUAL TO COORDINATE ELDERLY AND HANDICAPPED TRANSPORTATION SERVICES IN RURAL AND SMALL URBAN COUNTIES

Sue F. Knapp, Hannah Worthington, and Jon E. Burkhardt
Madison Wisconsin Dept. of Transportation 24 Dec. 1980 277 p refs
(PB81-197865; UMTA-WI-09-8004-81-1) Avail: NTIS HC A13/MF A01 CSCL 13B

The manual was prepared for use by local officials and staff to assist in the development of coordinated county wide transportation services for the elderly and handicapped (E&H). It is intended for use in the coordination of both specialized and public transportation in the predominantly rural counties of Wisconsin. The manual shows how to prepare a plan to the development of specialized transportation services in rural and small urban counties. The manual describes steps to improve coordination, and it includes methods and guidance for projecting costs and ridership, managing financial affairs, and implementing new or revised services. GRA

N81-33102# Transportation Research Board, Washington, D. C.
URBAN SYSTEMS AND TRAFFIC EVALUATIONS

William H. Dietrich, Michael A. Kennedy, Jon Twichell, Janis M. Gross, Peter M. Lima, Yacov Zahavi, Gabriel Roth, William D. Glauz, D. J. Migletz, and J. S. Ludwick, Jr. 1980 43 p refs
(PB81-204679; TRB/TRR-770; ISBN-0-309-03114-1; ISSN-0361-1981) Avail: NTIS HC A03/MF A01 CSCL 13B

Contents include: a joint institutional transportation systems management program; Forecasting energy impacts of TSM actions; an evaluation of transportation system management strategies; and measuring the effectiveness of priority schemes for high-occupancy vehicles. Traffic conflicts techniques for use at intersections are discussed. Comparison of three Ioran position-determination techniques in the Los Angeles area are presented. GRA

N81-34106# Versar, Inc., Springfield, Va.
CLASSIFYING SOLID WASTE DISPOSAL FACILITIES. GUIDANCE MANUAL

Jan. 1981 283 p refs
(Contract EPA-68-01-4767)
(PB81-218505; EPA/SW-199C) Avail: NTIS HC A13/MF A01 CSCL 13B

A manual for evaluating existing solid waste disposal facilities is presented. Evaluations are made to identify those facilities which do not comply with the 'Criteria for classification of Solid Waste Disposal Facilities and Practices' (the Criteria). As defined by the Resource Conservation and Recovery Act (RCRA) of 1976, facilities which do not comply with these Criteria are 'open dumps'. The Criteria provide minimum national standards for the protection of health and the environment from adverse effects resulting from solid waste disposal. The manual provides technical guidance on setting priorities for facility evaluations and on determining whether a particular facility violates the Criteria. GRA

N81-34108# Department of Transportation, Washington, D. C. Office of Univ. Research.

PUBLISHED RESULTS OF THE PROGRAM OF UNIVERSITY RESEARCH. TRANSPORTATION RESEARCH RESULTS
Helen L. Whitfield and Russell A. Capelle 1980 61 p
(PB81-210130) Avail: NTIS HC A04/MF A01 CSCL 13F

This bibliography contains approximately 400 citations of published reports from transportation related research. Topics covered include automotive technology, energy efficiency and

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management, transport of hazardous materials, land use/economic
impacts of transportation, and rail/guideway development.J.M.S.

MANAGEMENT TOOLS AND TECHNIQUES

Includes decisionmaking, modeling, forecasting, inventory controls, robots, and automation.

A81-10695 # A method of simulating calendar plans, utilizing an imitation model (Metodika razrabotki kalendarnykh planov na imitatsionnoi modeli). E. I. Perovskaia and L. A. Prokushev (Leningradskii Institut Aviatsonnogo Priborostroeniia, Leningrad, USSR). *Elektronnoe Modelirovanie*, Sept.-Oct. 1980, p. 83-86. In Russian.

The effect of a different preference function on the quality of simulated calendar plans is studied. A simulator of a technological process, employing SIMUL language is described. Attention is given to the effect of the size of a problem on the time necessary to complete simulation. V.T.

A81-18072 Canada's national aviation forecasting models. W. T. Tucker (Canadian Air Transportation Administration, Ottawa, Canada). In: International Air Transportation Conference, New Orleans, La., April 30-May 3, 1979, *Proceedings. Volume 1*. New York, American Society of Civil Engineers, 1979, p. 343-357.

This paper outlines the role of the Canadian Department of Transport in airport planning and site-specific forecasting. It then provides an overview of the national system of aviation forecasting models currently being developed and describes the progress to date. Two of these models, viz., the Air Passenger Origin and Destination Model (PODM) and the Passenger Traffic Allocation Model (PTAM), were recently completed and these are described in some detail. Finally, a brief summary is given of other forecasting methods and models with specific reference to planning peak period forecasts. (Author)

A81-18079 Investment decision-making in international airports. P. H. Beinhaker (IBI Group, Toronto; Beinhaker/Irwin Associates; InterBase, Inc.; Beinhaker Planning and Development Services, Ltd., Canada). In: International Air Transportation Conference, New Orleans, La., April 30-May 3, 1979, *Proceedings. Volume 2*. New York, American Society of Civil Engineers, 1979, p. 494-503.

The paper discusses the maximization of the initial land resource for airport facilities and the insurance of the protection of airport land and investments by insuring compatible land development on adjacent lands. The location of airport facilities in the close proximity of the airfield with adequate provisions for the expansion of passenger and ground access facilities is discussed. The maximum productivity in land use can be provided by charging land rents in accordance with the accessibility to the airfield; environmental factors should be accounted for by relating the costs of mitigation to the operations and/or facilities causing the problem and recovering the costs through charges. A.T.

A81-19842 Partly unmanned machining. O. Bjorke and A. Rolstadas. In: Advanced manufacturing technology: Programming research and operations logistics; *Proceedings of the Fourth International Conference*, Ann Arbor, Mich., May 21-23, 1979. Amsterdam, North-Holland Publishing Co., 1980, p. 271-284. 6 refs.

A manufacturing system design using the building block principle so that it is constructed of conventional parts permitting evolutionary development is discussed. Motion, state survey, and diagnostic functions can be included in a system which is implemented as a hierarchy consisting of the machine tool, the cell, and the total factory. The control system can be divided into management, technology, direct equipment, and diagnosis control portions. A.T.

A81-19846 Decision-aid and predicates in production control. G. Doumeingts, D. Breuil, G. Grislain, and L. Pun. In: Advanced manufacturing technology: Programming research and operations logistics; *Proceedings of the Fourth International Conference*, Ann

Arbor, Mich., May 21-23, 1979. Amsterdam, North-Holland Publishing Co., 1980, p. 427-443. 14 refs.

Production Control Systems (PCS) belong to the multilevel hierarchical complex system. A four-level decomposition of PCS adapted to the Decision Aid System is presented, along with a method for their analysis. The aim of the analysis is to determine decision centers in order to build decision aid systems adapted to the system controlled by decision makers. The conception of such DAS must use decision aid procedures and artificial intelligence techniques. This consists of formalizing the decision aid problem by using predicates. Such procedures make possible the utilization of computers. (Author)

A81-24263 Time variable failure rate prediction. A. C. Durr (Plessey Assessment Services, Ltd., Fareham, Hants., England). In: Annual Reliability and Maintainability Symposium, Philadelphia, Pa., January 27-29, 1981, *Proceedings*. New York, Institute of Electrical and Electronics Engineers, Inc., 1981, p. 122-127. 6 refs.

This paper presents a reliability model suitable for use on operational electronic/electrical repairable equipments in service with the Royal Navy. It was developed within the framework of a design-to-life-cycle (DTLC) cost study. The DTLC model comprises a matrix of inter-related sub-models of which the reliability sub-model forms one part. The development of the reliability model is outlined in this paper. An examination of the database is followed by curve-fitting procedures using a time-to-failure analysis and either a least squares or maximum likelihood regression of parameters. Both two-parameter and three-parameter time-dependent equations are tested. This analysis is complemented by a time-between-failure approach employing a Weibull distribution. (Author)

A81-30333 # Embedded software acquisition management. F. E. Douglas, III (USAF, Aeronautical Systems Div., Wright-Patterson AFB, Ohio). In: NAECON 1980; *Proceedings of the National Aerospace and Electronics Conference*, Dayton, Ohio, May 20-22, 1980. Volume 3. New York, Institute of Electrical and Electronics Engineers, Inc., 1980, p. 1039-1043. 10 refs.

The life cycle of a software development project is discussed with a view to potential points for management intervention. New management techniques with emphases on documentation, teaming, structuring, and review are examined. The documentation methods reduce dependence on personnel and provide measurable criteria for schedule considerations. The development of specialist teams can prove very cost-effective and reduces errors substantially. A structuring of the problem and plan of implementation leads to simplification of the acquisition process, and internal design reviews provide for early detection of design flaws and schedule slips. L.S.

A81-33775 # Supervisory control of manipulators (Supervizornoe upravlenie manipuliatsionnymi robotami). F. M. Kulakov. Moscow, Izdatel'stvo Nauka, 1980. 448 p. 146 refs. In Russian.

The problem of industrial robot control is examined with particular reference to the supervisory control concept whereby man is responsible only for such control functions that he can so far perform better than the computer. Consideration is given to the synthesis of new functional systems such as systems of decision making, man-machine interaction, and information and control. Organization of the computation process is also discussed. V.L.

A81-40468 # The Spacelab system verification programme - A powerful engineering-management tool. F. B. Sperling (ESA, Spacelab Systems Div., Noordwijk, Netherlands). *ESA Bulletin*, no. 26, May 1981, p. 62-69.

The Spacelab System Verification Program, developed to establish qualification procedures for Spacelab components and systems and monitor and control their completion, is discussed. The practical implementation of the verification program is described step by step, and the use of the system as a management tool at different stages of the Spacelab program is outlined. C.K.D.

05 MANAGEMENT TOOLS AND TECHNIQUES

A81-40715 The Apollo pacing item - The site selection decision-making process. W. L. Ziglar (Eastern College, Saint Davids, PA). *British Interplanetary Society, Journal (Astronautics History)*, vol. 34, Aug. 1981, p. 315-323. 38 refs.

The paper reviews NASA's manufacturing and test site decision making system of the early 1960's which led to the first manned lunar landing. Initially an Ad Hoc Task group was formed to study feasible approaches to projects and establish priorities. Preliminary criteria for the manufacturing plant included that it be accessible to water transportation, road, rail, and air connections, isolated in an area large enough for future growth, and on low cost land. The Michoud facility was chosen and the committee used a comparative point system to determine a suitable static test site to construct in the vicinity of the manufacturing plant. Among other locations Pearl River, Mississippi, was suggested by the committee and later chosen. The decisions for Southern locations, though often suspected of being politically motivated, were chosen for their high isolation and acoustical barriers, low land cost, accessibility to facilities, and their year round mild climate. D.L.G.

A81-43273 # Logistic simulation - A credible tool for decision makers. M. F. McGrath (U.S. Department of Defense, Washington, DC) and M. G. Henry (U.S. Defense Logistics Agency, Alexandria, VA). *IEEE Transactions on Reliability*, vol. R-30, Aug. 1981, p. 258-264. 9 refs.

Logistic simulation and sensitivity analysis can be useful in management reviews of major weapon acquisition programs. Two simulation analyses performed on the Navy's F/A-18 are reviewed: the first evaluates organization level maintenance and assesses the adequacy of supply support funding to achieve aircraft readiness objectives; the second evaluates the effects of intermediate level maintenance on aircraft readiness and examines some of the assumptions regarding variability of demand rates. The assumption that mean failure rates are constant values can result in significant errors in the prediction of operational readiness and sensitivity analysis results. The variability of mean demand is shown to have potentially far reaching implications concerning future support planning, but further work is required to fully understand and develop logistic support approaches to accommodate the variability. J.F.

N81-10701# Decision Research Corp., Eugene, Oreg. **HOW WELL DO PROBABILITY EXPERTS ASSESS PROBABILITIES? Technical Report, Jan. - Aug. 1980**

Sarah Lichtenstein and Baruch Fischhoff Aug. 1980 32 p refs

(Contract N00014-80-C-0150)

(AD-A089619: PTR-1092-80-8)

Avail: NTIS

HC A03/MF A01 CSCL 05/10

Past research on people's ability to assess probabilities has shown two common errors, overconfidence in one's knowledge and insensitivity to task difficulty. This research has created a new class of experts: those who have studied probability assessors and who are aware of the common errors. The performance of eight such experts is here compared to the performance of twelve untrained subjects and fifteen who had previously received training in probability assessment. All subjects responded to 500 general-knowledge items whose difficulty could be measured a priori from the item context. The experts appeared to have overcorrected for the overconfidence error: they were notably underconfident, whereas the untrained subjects were overconfident and the trained subjects were mixed. The experts were more sensitive than the other two groups to variations in item difficulty. However, even they showed a substantial insensitivity to difficulty, relative to ideal performance. Introspection suggests that this second error would be hard to overcome. GRA

N81-10994# Joint Publications Research Service, Arlington, Va.

WEST EUROPE REPORT: SCIENCE AND TECHNOLOGY NO. 5

27 Nov. 1979 85 p refs Transl. into ENGLISH from various European journals

(JPRS-74642) Avail: NTIS HC A05/MF A01

Welding techniques for underwater pipelines are examined. Computer controlled manufacturing and industrial energy conservation techniques are discussed. Other topics include long range heating sources, coal burning technologies, and nuclear power facilities.

N81-10996# Joint Publications Research Service, Arlington, Va.

COMPUTER-CONTROLLED MANUFACTURING

In its West Europe Rept.: Sci. and Technol., No. 5 (JPRS-74642) 27 Nov. 1979 p 32-40 Transl. into ENGLISH from Handelsblatt (Duesseldorf), 8 Oct. 1979 p 192-195

Avail: NTIS HC A05/MF A01

The situation of production enterprises in the highly developed industrial countries is characterized by growing market demands for quality and product delivery times, as well as by an increasing pressure of costs due to steadily stiffening competition. Thus, the need arises in the production area to use more efficient automated production techniques as well as to improve planning and control of the production process by using computer based production control systems. E.D.K.

N81-13016# Federal Aviation Administration, Washington, D.C. Office of Aviation Policy.

FAA AVIATION FORECASTS, FISCAL YEARS 1981 - 1992

Sep. 1980 69 p

(AD-A091288: FAA-AVP-80-8)

Avail: NTIS

HC A04/MF A01 CSCL 01/2

The aviation activity at FAA towered airports, in the aerospace under the control of the Air Route Traffic Control Centers, and the services provided by the Flight Service Stations are forecast for the several user groups: trunk and local service airlines, commuter airlines and air taxis, general aviation, and the military. Discussion of trends and events with special implications for aviation highlight the challenges and opportunities that lie ahead for aviation. Also presented are forecasts based on three alternative scenarios: economic expansion, energy conservation and stagflation. The alternative scenario forecasts provide a range around the baseline forecasts for planning purposes both within the FAA as well as for other users of the FAA forecasts. GRA

N81-13791 Northwestern Univ., Evanston, Ill.

INFORMATION USE IN DECISION-MAKING: THREE CASE STUDIES FOCUSING UPON THE USE OF CRITERIA IN THE DECISION-MAKING PROCESS Ph.D. Thesis

Vicki Lynn Sauter 1980 348 p

Avail: Univ. Microfilms Order No. 8026917

An in depth case study methodology involving three groups of decisions was used in the development of a conceptual model relating characteristics of a decision maker and his choice context to his needs for information. Three decision factors, external resource support, product effectiveness, and internal resource conversion, were identified as the principal determinants of decision makers' user of information. External resource support is the environmental factor that encourages or inhibits the survival capabilities of the alternative. Product effectiveness reflects the overall ability of a product (or program) to meet the needs and goals of decision makers. Finally, internal resource conversion addresses the ability of the alternative to efficiently convert inputs into outputs. The results suggest the existence of a hierarchy among the three factors that is dependent upon both a decision makers' confidence in the alternative and his confidence in the information that is provided. Dissert. Abstr.

N81-13792 Northwestern Univ., Evanston, Ill.

PROCUREMENT OF EVALUATION SYSTEMS: A CASE STUDY OF THE PARAMETRIC FACTOR EVALUATION APPROACH TO SOURCE SELECTION Ph.D. Thesis

Ardwin Stanley Libman 1980 589 p

Avail: Univ. Microfilms Order No. 8026856

The specific problem for which the technique was used was the selection of two contractors to develop an ongoing capability to evaluate the results (agency and commercial impacts) of experimental modifications in procurement procedures by selected federal, state, and local government agencies. These evaluation systems were to be implemented by organizations outside of the developing organization. The primary administrative finding is that the federal program was able to adapt successfully the technique, which was developed and used to procure 'hardware' systems, to meet its requirements to select contractors to develop these 'software' systems. The primary research contribution is the offering of an evaluation structure and an example of its use for future case studies of source selection techniques. Dissert. Abstr.

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N81-13797# Naval Ocean Research and Development Activity, Bay St. Louis, Miss.

OCEANOGRAPHIC MANAGEMENT AND INFORMATION SYSTEM (OMIS): THE NAVY OCEANOGRAPHIC PROGRAM, DATABASE

S. Wasowski Sep. 1980 14 p
(AD-A091186; NORDA-TN-67) Avail: NTIS
HC A02/MF A01 CSCL 08/10

The Navy's Oceanographic Program (NOP) contains many diverse projects in a wide variety of scientific and technological disciplines. The NOP database is a collection of information pertaining to the current projects of the Navy's oceanographic community, the objective of the database is to provide an information tool to management. Data elements include project title, performing organization and principal investigator, sponsor, program element funding, and a classification of the project's purpose using a closed vocabulary keyword system. GRA

N81-13804*# National Aeronautics and Space Administration, Washington, D. C.

PRODUCTIVITY IN AEROSPACE RESEARCH AND DEVELOPMENT

1980 62 p refs
(NASA-TM-82388) Avail: NTIS Avail: NTIS \$8.00 North American, all others \$16.00 CSCL 05A

The concept of productivity in a Federal research and development agency is multifaceted and complex. Four approaches were considered: the contribution of NASA to national productivity external to the agency; the use of new technology to increase the output of NASA's R&D effort; the achievement of management improvement which involves planning, organization, staffing, direction, and control; and the efficiency with which the agency's civil service labor resources are used to produce goods and services. Author

N81-15016# RAND Corp., Santa Monica, Calif.

STANDARD SPACECRAFT PROCUREMENT ANALYSIS: A CASE STUDY IN NASA-DOE COORDINATION IN SPACE PROGRAMS Ph.D. Thesis Interim Report

Elwyn D. Harris May 1980 226 p refs
(AD-A091420; RAND/R-2619-RC) Avail: NTIS
HC A11/MF A01 CSCL 05/1

This document examines organizational and procurement issues surrounding NASA-DoD cooperation for a specific case study, DoD use of NASA standard spacecraft. Space shuttle operation, as the U.S. standard launch vehicle for both NASA and DoD payloads, refocuses attention on NASA-DoD cooperation. Use of standard spacecraft designs offers reduced operational costs, but intensifies the difficulty of determining agency needs and responsibilities while retaining mission responsiveness. A modified system-impact-assessment approach compares total costs of alternative procurement options and applies both sensitivity and a fortiori analyses to manage uncertainty. Principal conclusions are: use of a new standard spacecraft design, rather than any original NASA or DoD designs, provides the basis for minimizing the cost of the Air Force Test Program; factors essential to NASA-DoD cooperation are a common subset of missions, a common organization responsibility, and an extensive period of time to develop the organizational mechanics; and the successful NASA-DoD cooperation model is not easily transferred to other situations. GRA

N81-15586# Ad-Ex International, Portola Valley, Calif.

METHODOLOGY FOR THE ANALYSIS OF ENVIRONMENTAL PARAMETERS ON A NATIONWIDE SCALE

G. Boeri, R. Caracciolo, R. Fiorenza, and A. Giordano Jul. 1980 42 p Transl. into ENGLISH of "Una Metodologia per l'analisi di Parametric Ambientali su Scala Nazionale" Rept CNEN RT/PROT (77-16 Comitato Nazl. Energia Nucl. (Italy), Jun. 1977 Prepared for California Univ., Lawrence Livermore Lab.; sponsored by DOE

(UCRL-Trans-11607) Avail: NTIS HC A03/MF A01

Some examples are presented of the progressive levels of refinement with which the methodology can operate for final territorial analyses to map out suitable sites for nuclear plants. Obviously the decision process concerning territorial choices to be made is very complicated and entails the integration of a large number of parameters -including those of a nontechnical nature. For these reasons CNEN, while preparing to present and discuss with ENNEL and the Regions the systematic criteria for choosing optimum nuclear sites on the regional and national

scale, developed a first level of visualization for the relevant territorial parameters in accord with the methods described.T.M.

N81-16764# Georgia Inst. of Tech., Atlanta. School of Information and Computer Science.

SOFTWARE PROJECT FORECASTING

Richard A. DeMillo and Richard J. Lipton Oct. 1980 19 p refs Prepared in cooperation with Princeton Univ., N.J.

(Contract N00014-79-C-0231)
(AD-A091923; GIT-ICS-80/09) Avail: NTIS
HC A02/MF A01 CSCL 09/2

We have argued that a major use of software metrics is in the forecasting problem for software projects. By analogy with weather forecasting, we may characterize the current state of knowledge in software forecasting as the gathering of portents. While these may be useful and sometimes decisive in project management, they are prescientific and qualitative. Further, it seems very unlikely that the portents can be developed into a useful theory of forecasting. To develop scientific forecasting tools, a rational way of predicting the future from historical primary data is required. It is also important that the primary data and the measurements used to obtain it satisfy some basic methodological requirements. For example, the hypotheses developed from the measurements should be meaningful in the sense implied by measurement theory. The statistical approach, seeking to predict future events on the basis of historical patterns, seems to be an attractive short range approach to the forecasting problem. The goal of the exact method is to be able to apply largescale computation to many micropredictions to synthesize a quantitative forecast. GRA

N81-16788# Stanford Univ., Calif. Dept. of Computer Science.

KNOWLEDGE ENGINEERING: THE APPLIED SIDE OF ARTIFICIAL INTELLIGENCE

Edward A. Feigenbaum Sep. 1980 1 p refs

(Contract N00014-80-C-0609)
(AD-A092574; SU-STAN-CS-80-812; HPP-80-121) Copyright. Avail: Issuing Activity CSCL 09/2

Expert System research in an emerging area of computer science that exploits the capabilities of computers for symbolic manipulation and inference to solve complex and difficult reasoning problems at the level of performance of human experts. The methods of this area are designed to acquire and represent both the formal and the informal knowledge that experts hold about the tasks of their discipline. Numerous applications to science, engineering, and medicine have been accomplished. Expert System projects represent applied artificial intelligence research, though they also make salient numerous fundamental research issues in the acquisition, representation and utilization of knowledge by computer programs. Knowledge engineering approaches promise significant cost savings in certain applications; intelligent computer-based aids for practitioners in fields whose knowledge is primarily nonmathematical; and the elucidation of the heuristic knowledge of experts, the largely private knowledge of practice. There are major problems of knowledge engineering including the shortage of adequate computer equipment, the shortage of trained specialists in applied artificial intelligence, the scientific base for adequate knowledge acquisition, and the lack of sustained funding. GRA

N81-16944# Army Missile Command, Redstone Arsenal, Ala. Technology Integration Office.

A METHODOLOGY FOR AGGREGATION OF MULTIPLE CRITERIA RANK-ORDERED PRIORITIES

Edward B. Dobbins May 1980 206 p refs
(AD-A091884; AD-E950034; DRSMI/RN-80-3-MR) Avail: NTIS HC A10/MF A01 CSCL 05/1

This report is concerned with the aggregation of multiple rank-ordered research and development projects or product requirements. The resultant prioritized list serves as a resource allocation basis for the R D projects. The rank orders are ordinal and without feedback or strategy. The extensive literature of the social choice field is structured and analyzed for this research. Building upon that foundation, this research classified the known majority-rule aggregation methods, evaluated them, and developed a model and computer code using the better methods to compute the aggregation of up to 100 rank-ordered lists of up to 100 alternatives. Decision-maker and alternative weighting may be applied by any of eight methods. Judge self-evaluation

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weighting is also available. Final rank-ordered priority lists of R D projects are computed by the Borda, Adjusted Borda, and Shannon Majority-Rule methods. The preferred Shannon method handles complete, partial, and weighted rank orders without transitivity. Fuzzy set rank orders are compared. Kendall's coefficients of consistency and concordance evaluate the rank orders. The model is validated by comparative computation of many rank-ordered aggregation examples from the literature.

GRA

N81-17715* Forschungsinstitut fuer Anthropotechnik, Meckenheim (West Germany). Forschungsgesellschaft fuer Angewandte Naturwissenschaften e. V.

MONITORING AND DECISION MAKING BY PEOPLE IN MAN MACHINE SYSTEMS (UEBERWACHUNGS- UND ENTSCHEIDUNGSVERHALTEN DES MENSCHEN IN MENSCH-MASCHINE-SYSTEMEN)

G. Johannsen May 1979 92 p refs Partly in GERMAN and ENGLISH

(Grant NSG-2119)

(NASA-CR-184026; FB-44) Avail: NTIS HC A05/MF A01; Fachinformationszentrum, Karlsruhe, West Germany DM 10 CSDL 05H

The analysis of human monitoring and decision making behavior as well as its modeling are described. Classic and optimal control theoretical, monitoring models are surveyed. The relationship between attention allocation and eye movements is discussed. As an example of applications, the evaluation of predictor displays by means of the optimal control model is explained. Fault detection involving continuous signals and decision making behavior of a human operator engaged in fault diagnosis during different operation and maintenance situations are illustrated. Computer aided decision making is considered as a queueing problem. It is shown to what extent computer aids can be based on the state of human activity as measured by psychophysiological quantities. Finally, management information systems for different application areas are mentioned. The possibilities of mathematical modeling of human behavior in complex man machine systems are also critically assessed.

Author (ESA)

N81-17730# Texas Univ. at Austin. Center for Cybernetic Studies.

A PRIMAL SIMPLEX CODE FOR COMPUTING THE EFFICIENCY OF DECISION MAKING UNITS (VERSION 2.0)

Authella Bessent and Jeff Kennington (Southern Methodist Univ., Dallas, Tex.) Oct. 1980 18 p refs Prepared in cooperation with Carnegie Mellon Univ., Pittsburgh

(Contracts N00014-80-C-0242; N00014-76-C-0932)

(AD-A092982; CCS-383) Avail: NTIS HC A02/MF A01 CSDL 12/1

This technical report describes the computer code (Version 2.0 of SMU1) developed to compute the efficiency of a set of decision making units (DMU's) with common inputs and outputs. The code, written in FORTRAN and tested on a CDC Cyber 73 using an MNF compiler, employs a modified primal simplex code. A sample of the computer generated solution is included.

GRA

N81-17766# Bolt, Beranek, and Newman, Inc., Cambridge, Mass. **RESEARCH IN KNOWLEDGE REPRESENTATION FOR NATURAL LANGUAGE UNDERSTANDING Annual Report, 1 Sep. 1979 - 31 Aug. 1980**

William A. Woods, Ronald J. Brachman, Robert J. Bobrow, P. Cohen, B. Goodman, D. Israel, J. Schmolze, and C. Sidner Nov. 1980 40 p refs

(Contract N00014-77-C-0378; ARPA Order 3414)

(AD-A092971; BBN-4513) Avail: NTIS HC A03/MF A01 CSDL 09/2

BBN's ARPA project in Knowledge Representation for Natural Language Understanding is aimed at developing techniques for computer assistance to a decision maker in understanding a complex system or situation using natural language control of an intelligence graphics display. The work that we have been doing falls into three classes: fluent natural language understanding in a graphics context including helpful systems that go beyond mere passive execution of literal instructions, fundamental problems of knowledge representation and use, and abstract parallel algorithms for knowledge base inferential operations. In this report, we will give a brief summary of the activities of this

research project during the past year, in particular in the areas of research on parallel algorithms and VLSI, research on the KL-ONE system, and research on natural language understanding. In addition, we document publications written, presentations given and workshops attended.

GRA

N81-17813# Army Aviation Research and Development Command, St. Louis, Mo.

PROBABILISTIC ESTIMATES WITH LIMITED DATA Final Report

Conrad W. Faber Nov. 1980 43 p refs

(AD-A093969; USAAVRADCOM-TM-81-F-1) Avail: NTIS HC A03/MF A01 CSDL 12/1

Decision makers require and need more than a point estimate of the cost and schedule for new or on-going programs. Much has been written about how to quantify program risks based upon historical data. However, estimates for new systems frequently depend upon expert opinion from a few knowledgeable persons because an applicable historical data base is not available. The method proposed in this report utilizes a PERT type network, beta distribution parameters for expert opinion inputs, and convolution of activity distributions by simulation.

GRA

N81-17846# Pennsylvania Univ., Philadelphia. Dept. of Decision Sciences.

DATA BASE DESIGN FOR DECISION SUPPORT

Eric K. Clemons Oct. 1980 25 p refs

(Contract N00014-75-C-0482; NR Proj. 049-272)

(AD-A093442) Avail: NTIS HC A02/MF A01 CSDL 05/2

A satisfactory user interface is essential for a decision support system to gain acceptance, and system performance is an important component of the user interface. Several suggestions for data base design are presented to improve system performance and response time, and thus to improve the user interface. GRA

N81-18682 California Univ., Los Angeles.

IDEA: AN ISSUE-DRIVEN ELICITATION ALGORITHM FOR DECISION PROBLEM STRUCTURING Ph.D. Thesis

Joseph Saleh 1980 148 p

Avail: Univ. Microfilms Order No. 8102873

A computerized, domain independent, decision support system which is based on an issue driven elicitation algorithm is described. The algorithm uses a goal directed structure for representing decision problems. The structure allows the user to state relations among aspects, effects, conditions, and goals, in addition to actions and states which are the basic components of the traditional decision tree approach. The program interacts with the user in a stylized English-like dialogue, starting with the stated objectives and proceeding to unravel the more detailed means by which these objectives can be realized. The disparity between the desire to accomplish an objective and the ability to do that establishes an issue. At any time, the program focuses the user's attention on the issues which are most crucial to the problem at hand. The structure used is highly compatible with the way people encode knowledge about problems and actions and, therefore, promises to offer the following: (1) judgments and beliefs issued by the user would constitute a valid representation of the user's experience, and (2) the user may be guided toward the discovery of action alternatives he otherwise would not have identified.

Dissert. Abstr.

N81-18701 Utah State Univ., Logan.

VECTOR OPTIMIZATION DECISION CONVERGENCE ALGORITHM (VODCA) Ph.D. Thesis

Thomas Ward Morgan 1980 150 p

Avail: Univ. Microfilms Order No. 8104114

A methodology is described for the integration of a formal mathematical programming technique for generating the full range of feasible alternatives with a pragmatic group-interaction technique for extracting value information regarding alternatives. The integration results in an iterative group-interaction process which leads to successive reductions in the preferred range of alternatives until the most preferred alternative is identified. The methodology represents an improvement over other methodologies in two areas: (1) the noninferior set is explicitly identified insuring selection of a group decision point which is noninferior, (2) a least squared error mathematical filtering technique is developed for smoothing relative value data obtained from the decision making body. In addition, a convergence proof is developed which not only indicates the theoretically sound and robust nature of the algorithm but in addition provides a basis for an improved

class of algorithms for solving classical nonlinear constrained problems. The technique was developed for and implemented in an interactive software package. The multiobjective decision problem is solved in a single encounter with a cooperative decision making group. Dissert. Abstr.

N81-18730 Syracuse Univ., N. Y.
RANDOM WALK MARKOV DECISION PROCESSES AND THEIR APPLICATIONS TO QUEUES Ph.D. Thesis
Fanglieh Victor Lu 1980 156 p
Avail: Univ. Microfilms Order No. 8104532

Three random walk Markov decision processes are studied: a random walk on the nonnegative integers that is downward skipfree, a simple random walk on the nonnegative integers and a multidimensional random walk. In each of these processes, the transition probabilities are controlled at each discrete time epoch and rewards are received based on the state of the walks and the controlled actions. In the simple random walk there is also a cost for changing the control actions. Sufficient conditions are presented on the reward functions and transition probabilities for these models that ensure the existence of certain natural monotone optimal control policies. Methods for computing monotone optimal policies are briefly discussed. Results on the random walk decision processes are applied to some queueing and marketing decision problems. Dissert. Abstr.

N81-18917# California Univ., Los Angeles. Cognitive Systems Lab.
GODDESS: A GOAL-DIRECTED DECISION STRUCTURING SYSTEM
Judea Pearl, Antonio Leal, and Joseph Saleh Jun. 1980 67 p refs
(Contract N00014-78-C-0372: NR Proj. 197-049)
(AD-A094406; UCLA-ENG-CSL-8034) Avail: NTIS HC A04/MF A01 CSCL 05/10

This report describes a preliminary operational version of a computerized, domain-independent, decision support system which is based on a novel, goal directed structure for representing decision problems. The structure allows the user to state relations among aspects, effects, conditions, and goals, in addition to actions and states which are the basic components of the traditional decision tree approach. The program interacts with the user in a stylized English-like dialogue, starting with the stated objectives and proceeding to unravel the more detailed means by which these objectives can be realized. At any point in time, the program focuses the user's attention on the issues which are most crucial to the problem at hand. The structure used is more compatible with the way people encode knowledge about problems and actions and, therefore, promises to offer the following advantages: judgments and beliefs issued by the user would constitute a more valid representation of the user's experience and the user may be guided toward the discovery of action alternatives he otherwise would not have identified. GRA

N81-18933# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.
A METHODOLOGY FOR FOSTERING COMMERCIALIZATION OF ELECTRIC AND HYBRID VEHICLE PROPULSION SYSTEMS
Pierre A. Thollot and Norman T. Musial Oct. 1980 14 p refs
(Contract EC-77-A-31-1044)
(NASA-TM-81575; E-545; DOE/NASA/1044-10) Avail: NTIS HC A02/MF A01 CSCL 13F

The rationale behind, and a proposed approach for, application of government assistance to accelerate the process of moving a new electric vehicle propulsion system product from technological readiness to profitable marketplace acceptance and utilization are described. Emphasis is on strategy, applicable incentives, and an implementation process. T.M.

N81-19103# Naval Research Lab., Washington, D. C. Information Processing Systems Branch.
EVALUATION OF THE A-7 REQUIREMENTS DOCUMENT BY ANALYSIS OF CHANGE DATA Interim Report
Victor R. Basili (Maryland Univ.) and David M. Weiss 29 Dec. 1980 21 p refs
(RR0140941)
(AD-A094888; NRL-8445) Avail: NTIS HC A02/MF A01 CSCL 09/2

We describe in this report an effective data collection method

for evaluating software development methodologies, from definition of the objectives of the data collection to analysis of the results. We show how the data analysis can answer questions with respect to how successfully the goals of the development methodology are met. The A-7 requirements document is used as an example. We provide the results of data analyses conducted partway through the A-7 flight software development cycle, and we discuss the utility of information obtained by such partial analyses. Results from the study show that data collection is feasible and useful when performed as part of configuration control, that data distributions based on partial data provided useful feedback to the developers, and that the A-7 requirements document is easily maintained and changed. GRA

N81-19111# RAND Corp., Santa Monica, Calif.
PREDICTING COST/RELIABILITY/MAINTAINABILITY OF ADVANCED GENERAL AVIATION AVIONICS EQUIPMENT Final Report
M. R. Davis, M. Kamins, and W. E. Mooz Jun. 1978 126 p refs
(Contract NAS2-9450)
(NASA-CR-152149; RAND/WN-10233-NASA) Avail: NTIS HC A07/MF A01 CSCL 01D

A methodology is provided for assisting NASA in estimating the cost, reliability, and maintenance (CRM) requirements for general avionics equipment operating in the 1980's. Practical problems of predicting these factors are examined. The usefulness and short comings of different approaches for modeling cost and reliability estimates are discussed together with special problems caused by the lack of historical data on the cost of maintaining general aviation avionics. Suggestions are offered on how NASA might proceed in assessing cost reliability CRM implications in the absence of reliable generalized predictive models. A.R.H.

N81-19473# California Univ., Berkeley. Operations Research Center.
LIFE DISTRIBUTION MODELS AND INCOMPLETE DATA
Richard E. Barlow and Frank Proschan (Florida State Univ., Tallahassee) Sep. 1980 59 p refs Prepared in cooperation with Florida State Univ., Tallahassee
(Grant AF-AFOSR-3179-77; AF Proj. 2304)
(AD-A095068; ORC-80-20) Avail: NTIS HC A04/MF A01 CSCL 21/1

This report represents the second chapter of a book in preparation of inference and data analysis in reliability and life testing. The point of view adopted differs from that of most books on the subject in the following basic respect, prior information available to the reliability analysis is utilized fully in a formal statistical fashion. Experience accumulated in helping engineers, quality assurance managers, scientists, biostatisticians, and others who must make estimates and reach decisions from either planned experiments or retrospective data has shown us that the point of view adopted throughout the book has resulted in useful solutions to real life problems. By contrast, more classical statistical methods have often proven inadequate in many practical problems simply because the data available are insufficient to reach conclusions with a desired degree of assurance. The book is intended primarily for actual use by the engineering and scientific practitioner, rather than for theoretical study and philosophical analysis by the statistician. GRA

N81-19960# Decisions and Designs, Inc., McLean, Va.
RSCREEN AND OPGEN: TWO PROBLEM STRUCTURING DECISION AIDS WHICH EMPLOY DECISION TEMPLATES
Jonathan J. Weiss and Clinton W. Kelly, III Oct. 1980 120 p refs
(Contract N00014-79-C-0068; DARPA Order 3668)
(AD-A094784; TR-80-4-97) Avail: NTIS HC A06/MF A01 CSCL 05/10

Decision templates are prestructured procedural aids for evaluating various alternative courses of action available to a decision maker. This report describes two computer based decision aids which are structured using decision analytic methodology. The first aid, RSCREEN (Rapid SCREENing of decision options), is an interactive computer software program that assists decision makers in a crisis situation characterized by severe constraints on time, detailed information processing procedures, and training in evaluating several different courses of action. Each decision template in the RSCREEN aid encompasses the critical elements of the political-military situation in much the same manner as a

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well developed contingency plan. For example, if a decision maker is faced with the immediate evacuation of diplomatic personnel from a hostile foreign country, he/she can draw on the RSCREEN aid for relevant data on evacuation procedures in general and to assess his/her particular problem in light of these previous evacuation procedures. GRA

N81-21230# RANN, Inc., Palo Alto, Calif.
COMPARATIVE ANALYSIS OF COAL USE OPTIONS FOR REDUCING THE DEPENDENCE OF UTILITIES ON IMPORTED OIL

A. J. Eggers, Jr. 3 Jan. 1980 64 p refs
(Contract DE-AC01-78RA-12301)
(DOE/RA-12301-T1) Avail: NTIS HC A04/MF A01

The conversion of utilities from oil-fired to coal-fired to yield an import reduction of 0.75 MBD by 1990. It is indicated, therefore, that the program development and management techniques employed in the Apollo Polaris, and Minuteman programs may have useful application to the utility conversion program. These techniques include comparative systems and mission mode analysis, and the application of these techniques to the utility conversion program is discussed. It is suggested that DOE/RA initiate an in-house task force effort to make a comparative analysis of conversion alternatives to meet this goal. This analysis is discussed in some detail and it should consider the coal delivery as well as the conversion elements of the overall coal use system with a view to focusing on problems which must be addressed. DOE

N81-21781# Naval Postgraduate School, Monterey, Calif.
A COMPUTER EVALUATION TECHNIQUE FOR EARLY SELECTION OF HARDWARE M.S. Thesis

Bart Dallas Hodgins Dec. 1980 125 p refs
(AD-A096302) Avail: NTIS HC A06/MF A01 CSCL 09/2

There is a need for a decision making/early selection tool for use in the government computer selection process. Such early selection tools are critical to the decision maker due to the environment in which the government procurer is forced to operate. The instruction mix sensitivity technique as demonstrated here has the potential to aid the government decision maker in evaluating the performance of a computer prior to the actual existence or availability of that hardware without resorting to costly and time consuming techniques such as simulation or modeling. GRA

N81-21829# Purdue Univ., Lafayette, Ind. School of Industrial Engineering.

CAN-Q (COMPUTER ANALYSIS OF NETWORKS OF QUEUES) USER'S GUIDE. THE OPTIMAL PLANNING OF COMPUTERIZED MANUFACTURING SYSTEMS

James J. Solberg Jul. 1980 50 p refs
(Grant NSF APR-74-15256)
(PB81-132078; NSF/RA-800226; Rept-9) Avail: NTIS HC A03/MF A01 CSCL 13H

Instructions for using the most recent FORTRAN version of Computer Analysis of Networks of Queues (CAN-Q) are given. CAN-Q is a mathematical model for analyzing work flow in a production system. The program has been tested thoroughly using both real and simulated data. The User's Guide describes CAN-Q, defines terms, and illustrates the application of CAN-Q to a system which includes three stations (work places) producing only two product types. Interpretation of the output indicates what to expect, provide, and receive from the program. Also, input formats are presented with directions for solving handling problems. A CAN-Q bibliography and program listing are included. GRA

N81-22816# Virginia Univ., Charlottesville. Dept. of Engineering Science and Systems.

DECISION SUPPORT WITH PARTIALLY IDENTIFIED PARAMETERS

Chelsea C. White, III, Andrew P. Sage, and William T. Scherer 15 Mar. 1981 51 p refs
(Contract N00014-80-C-0542; NR Proj. 197-065)
(AD-A096871; UVA/SE-81-5) Avail: NTIS HC A04/MF A01 CSCL 12/2

In this paper, we investigate the problem of determining a preference structure on the set of alternatives for a general class of single-stage, choice making models with imprecisely known parameters. A variety of decision making problems under

certainty and under uncertainty are modeled by the general problem formulation. The imprecisely known parameters can be, for example, attribute trade-off weights, value scores, probabilities, and utility values. Parameter imprecision is described by assuming that certain groups of parameters are members of given sets. This description forms the basis for a general and behaviorally relevant assessment model. Solution procedures for four important special cases of the general problem formulation are determined. A hypothetical automobile purchasing problem is used to illustrate the decision aiding applicability of the results. GRA

N81-22970# Decisions and Designs, Inc., McLean, Va.
ISSUES IN THE DESIGN AND EVALUATION OF DECISION-ANALYTIC AIDS

Leonard Adelman, Michael Donnell, L., John E. Patterson, and Jonathan J. Weiss Feb. 1981 74 p refs
(Contract MDA903-80-C-0194; DARPA Order 3831)
(AD-A096893; TR-81-1-304) Avail: NTIS HC A04/MF A01 CSCL 12/2

During recent years, decision analysis has emerged as a highly valuable technology for allowing decision makers to formulate important problems in a logical framework, incorporating factual as well as judgmental information to arrive at a consistent, realistic solution. Computers have served well as aids to calculation, display, editing, and memory functions. On the basis of previous success, organizations are beginning to develop computer-based decision-analytic aids with stand-alone capabilities for routine use by internal analysts and decision makers without outside consultation. Decision-analytic aids include different types of multi-attribute utility assessment models and traditional decision-theoretic tree models requiring probability and utility assessments. Although some stand-alone decision-analytic aids have been quite successful, others have not been utilized by their prospective users. The purpose of this report is to provide guidelines for the effective design, implementation, and evaluation of such decision aids. A framework for considering issues relevant to the design and evaluation of decision-analytic aids is presented in the introduction. This framework identifies three interfaces essential for the effective integration of decision aids into organizations. This first interface is between the decision aid and the user; here, the issue is the extent to which characteristics of the aid facilitate or hinder its usability. GRA

N81-22983# Argonne National Lab., Ill. Energy and Environmental Systems Div.

METHODOLOGY FOR EVALUATION OF INTERTECHNOLOGY TRADEOFFS

W. A. Buehring, R. G. Whitfield, and T. D. Wolsko Oct. 1980 111 p refs
(Contract W-31-109-eng-38)
(ANL/AA-22) Avail: NTIS HC A06/MF A01

A methodology interface between the impact-assessment process and the decision maker is developed. Problems are characterized by: (1) multiple conflicting objectives; (2) uncertainty; (3) variable outcomes over time; and (4) dynamic behavior. Minimum cost, benefit-cost, and decision analysis are three approaches taken with respect to this type of problem. The recommended methodology has three basic stages: (1) problem formulation; (2) objective hierarchy selection; and (3) alternative evaluation. DOE

N81-23849# Virginia Univ., Charlottesville. Dept. of Engineering Science and Systems.

USE OF SECOND ORDER STOCHASTIC DOMINANCE IN DECISION AIDING

Chelsea C. White, III and Andrew P. Sage Feb. 1981 25 p refs
(Contract N00014-80-C-0542; NR Proj. 197-065)
(AD-A097117; UVA/SE-81-3) Avail: NTIS HC A02/MF A01 CSCL 12/1

In this paper we examine a single-stage, multiobjective decisionmaking problem under uncertainty. The decisionmaker can select any one of a finite number of alternatives. After any alternative is chosen, one of a finite number of outcomes will result. The probabilistic relationship between each alternative and each outcome is presumed to be known. We assume that all that is known about the decisionmaker is that he or she is risk adverse. Our objective is to determine the smallest subset of alternatives that is guaranteed to contain the most preferred alternative on the basis of this assumption. The achievement of

this objective presumably enhances decisionmaking since alternative selection is generally easier if made from a subset of the alternative set rather than from the entire alternative set. The intent of this paper is to present an approach which achieves this objective and which has computational times amenable to interactive decision aiding. We make use of a fact, due to Fishburn and Vickson, which states that the feasibility of a certain collection of linear equalities and inequalities represents a necessary and sufficient condition for one alternative to be weakly preferred to another with respect to the second order stochastic dominance (SSD) relation. The approach presented here uses transitivity and upper and lower bounds on this relation in order to reduce the number of concomitant linear programs necessary for solution. The lower bound is provided by the first order stochastic dominance relation; the upper bound is given by a relation that is equivalent to the second order stochastic dominance relation when certain independence conditions hold. An example illustrates these results. Author (GRA)

N81-23940# Virginia Univ., Charlottesville. Dept. of Engineering Science and Systems.

ON SENSITIVITY ANALYSIS IN SYSTEMS FOR PLANNING AND DECISION SUPPORT

Andrew P. Sage 1 Jan. 1981 54 p refs
(Contract N00014-80-C-0542; NR Proj. 197-065)
(AD-A097409; UVA/SE-81-1) Avail: NTIS HC A04/MF A01
CSCL 12/2

This paper surveys contemporary research involving error and sensitivity analysis approaches useful for the design of aids for planning and decision support. Discussed are structural sensitivity considerations as well as the effect of errors, for both single and multiattribute cases, in estimation or elicitation of probabilities and utilities. One of the major uses for sensitivity analysis type results is in bounded prioritization of alternatives using ordinal information. This use of sensitivity analysis is discussed and illustrated with examples. Author (GRA)

N81-23941# Virginia Univ., Charlottesville. Dept. of Engineering Science and Systems.

MULTIPLE OBJECTIVE EVALUATION AND CHOICEMAKING UNDER RISK WITH PARTIAL PREFERENCE INFORMATION

Chelsea C. White, III and Andrew P. Sage 1 Feb. 1981 50 p refs
(Contract N00014-80-C-0542; NR Proj. 197-065)
(AD-A097418; UVA/SE-81-2) Avail: NTIS HC A03/MF A01
CSCL 12/2

In this paper, we consider a single stage, multiattribute decision making problem under risk. Each outcome is associated with a vector of value scores. The set of value score vectors is partially ordered in the usual manner. This partial order is used to induce partial orders on the set of alternatives based on: expected value score, first order stochastic dominance, and second order stochastic dominance. We show that properly aggregating value scores produces a more refined partial order on the set of value score vectors, which then induces a more refined partial order on the alternative set. This result forms the basis of a decision aiding procedure which: (1) identifies the nondominated set of alternatives, a set guaranteed to contain the most preferred alternative under mild assumptions, (2) asks the decision maker to choose a most preferred alternative from the nondominated set, and (3) if this choice cannot be made, aggregates some, but not necessarily all, of the value scores to strengthen the partial order on the alternative set, thus reducing the size of the nondominated set and presumably enhancing alternative selection. The potential value of this procedure is that it is interactive, it can accommodate a variety of levels of online preference feedback from the decision maker, and it does not necessarily require that the value scores be completely aggregated. Author (GRA)

N81-23969# Battelle Inst., Frankfurt am Main (West Germany). **DEVELOPMENT OF A COMPUTER-AIDED METHOD FOR THE TECHNO-ECONOMIC EVALUATION OF R AND D PROJECTS IN THE MINING AREA. STAGE 1: DEVELOPMENT OF THE CONCEPT AND IDENTIFICATION OF APPLICATION** Final Report

Peter Hess, Goetz Schauda, Wolfgang Schneider, and Eberhard Hellermann Dec. 1980 158 p refs
(BMFT-FB-T-80-130; ISSN-0340-7608; BF-R-63.297-1) Avail:

NTIS (US Sales only) HC A08/MF A01

Functional, volume and cost structures are described and, as far as possible, company specific characteristics are established which enable the impacts of R and D projects to be evaluated quantitatively. The work was started from the assumption that the evaluation must be based on the problem solutions to be achieved with the R and D projects in question and the impacts to be expected in the user area. Due to the large number of impacts to be assessed, a multidimensional evaluation method was used. A method of utility value analysis is presented. DOE

N81-24725*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif.

AUTOMATION IN ORGANIZATIONS: ETERNAL CONFLICT

Duncan L. Dieterly May 1981 40 p refs Prepared in cooperation with Air Force Human Resources Lab., Moffett Field, Calif. (NASA-TM-81290; A-8574; AFHRL-H-81-808) Avail: NTIS HC A03/MF A01 CSCL 05H

Some ideas on and insights into the problems associated with automation in organizations are presented with emphasis on the concept of automation, its relationship to the individual, and its impact on system performance. An analogy is drawn, based on an American folk hero, to emphasize the extent of the problems encountered when dealing with automation within an organization. A model is proposed to focus attention on a set of appropriate dimensions. The function allocation process becomes a prominent aspect of the model. The current state of automation research is mentioned in relation to the ideas introduced. Proposed directions for an improved understanding of automation's effect on the individual's efficiency are discussed. The importance of understanding the individual's perception of the system in terms of the degree of automation is highlighted. A.R.H.

N81-24731# Centre Technique des Industries Mecaniques, St. Etienne (France).

COMPILATION OF A CATALOG OF MANIPULATOR ARMS AND INDUSTRIAL ROBOTS Final Report [CONSTITUTION D'UNE DOCUMENTATION RELATIVE AUX BRAS MANIPULATEURS ET ROBOTS INDUSTRIELS]

J. P. Devimeux Dec. 1979 139 p In FRENCH
(CETIM-1-4N-02-O-X) Avail: NTIS HC A07/MF A01

A catalog of mechanical devices which are commercially available for the automation of a wide variety of industrial jobs, is presented. Robotics, the classification of these machines, and functional characteristics of manipulators and industrial robots are considered. Machine learning, (command) and control, is treated. Industrial applications of automation are surveyed. The literature on each machine listed is reviewed, and a machine data sheet for each device are also included. Author (ESA)

N81-24840# Iowa Univ., Iowa City. Div. of Educational Psychology.

MULTIATTRIBUTE FIXED-STATE UTILITY ASSESSMENT Technical Report, 1 Jul. - 31 Dec. 1980

David L. Libby and Melvin R. Novick 27 Mar. 1981 206 p refs
(Contract N00014-77-C-0428; Grant NSF SED-80-06357; RR0420401; NR Proj. 150-404)
(AD-A098230; TR-81-4) Avail: NTIS HC A10/MF A01 CSCL 12/1

This paper is concerned with the assessment of utility functions for multiple attributes. The literature on utility assessment, multidimensional scaling, conjoint measurement, and conditional expected utility theory is reviewed. A procedure for utility assessment is presented using as models cumulative multivariate distribution functions. Author (GRA)

N81-24847# Iowa Univ., Iowa City. Div. of Educational Psychology.

FIXED STATE UTILITY SCALING: COMPARISON OF DIFFERENT CRITERIA Technical Report, 1 Jan. - 31 Dec. 1980

Shin-ichi Mayekawa and Melvin R. Novick 20 Mar. 1981 32 p refs
(Contract N00014-77-C-0428)
(AD-A098227; TR-81-3) Avail: NTIS HC A03/MF A01 CSCL 12/1

Several methods of fitting utilities using fixed state gambles

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and least-squares criteria are compared. It was found that similar results are found when the maximization is done in the probability, log-odds, or root arc-sine matrix. GRA

N81-24979 Illinois Univ. at Urbana-Champaign.
STRATEGIES IN MULTIPLE CRITERIA DECISION MAKING
Ph.D. Thesis
Manoochehr Ghiassi 1980 141 p
Avail: Univ. Microfilms Order No. 8108515

The Multiple Criteria Decision Making (MCDM) problem is considered in its general form. The focus is on multiple objective linear programming (MOLP) problems. The MCDM is examined for possible modifications in an attempt to resolve conflicts among the objectives. The concept of the range of compromise is introduced. Determination of the range of compromise requires evaluation of two parameters n sub v the minimum value that objective v can take within the nondominated set and M sub v the maximum feasible value for objective v . An algorithm is developed to find n sub v . Evaluation of M sub v is a straightforward linear programming problem. A weighting method called Dimensionless Weighting Method is employed to solve the MOLP problem. Two different kinds of composite functions are introduced: (1) the linearly weighted composite function; and, (2) the Minimax formulation. Dissert. Abstr.

N81-24982# Brookhaven National Lab., Upton, N. Y. Dept. of Energy and Environment.
PROCESS MODELS: ANALYTICAL TOOLS FOR MANAGING INDUSTRIAL ENERGY SYSTEMS
Stephen O. Howe, David A. Pilati, Chip Balzer, and F. T. Sparrow (Purdue Univ., Lafayette, Ind.) 1980 20 p refs Presented at the 7th Natl. Conf. on Energy and the Environment, Phoenix, Ariz., 30 Nov. - 3 Dec. 1980
(Contract DE-AC02-76CH-00016)
(BNL-28837; CONF-801171-3) Avail: NTIS HC A02/MF A01

How the process models are used to analyze industrial energy systems is described and illustrated. Following a brief overview of the industry modeling program, the general methodology of process modeling is discussed. The discussion highlights the important concepts, contents, inputs, and outputs of a typical process model. A model of the US pulp and paper industry is discussed as a specific application of process modeling methodology. Applications addressed include projections of energy demand, conservation technology assessment, energy-related tax policies, and sensitivity analysis. A subsequent discussion of these results supports the conclusion that industry process models are versatile and powerful tools for managing industrial energy systems. DOE

N81-25316# Market Facts, Inc., Washington, D. C.
ENERGY-EFFICIENT ELECTRIC MOTORS STUDY
23 Mar. 1981 144 p
(Contract DE-AC01-79CS-40265)
(DOE/CS-40265/T1) Avail: NTIS HC A07/MF A01

A survey conducted of purchasers of integral horsepower polyphase motors measured current knowledge of and awareness of energy efficient motors, decision making criteria, information sources, purchase and usage patterns, and related factors. The data obtained were used for the electric motor market penetration analysis. Additionally, a telephone survey was made. The study also provides analyses of distribution channels, commercialization constraints, and the impacts of government programs and rising energy prices. Study findings, conclusions, and recommendations are presented. Sample questionnaires and copies of letters to respondents are presented in appendices as well as descriptions of the methods used. DOE

N81-25350 Stanford Univ., Calif.
CONSTRUCTION OPERATIONS DATA ACQUISITION AND PROCESSING VIA TIME LAPSE PHOTOGRAPHY INTERFACED TO A MINICOMPUTER Ph.D. Thesis
Ali Touran 1981 208 p
Avail: Univ. Microfilms Order No. 8109006

An interactive computer system has been developed for collecting and statistically preprocessing data pertaining to construction operations into a form usable by available simulation and planning systems. The input to the system is frame-counts corresponding to initiation and termination of construction activities extracted from time-lapse films. The inputs required

for most analytical management tools in construction are activity duration times and cycles. Dissert. Abstr.

N81-25706# Decisions and Designs, Inc., McLean, Va.
ADVISORY DECISION AIDS: A PROTOTYPE
John F. Patterson, L. Scott Randall, and Richard R. Stewart
Feb. 1981 51 p refs
(Contract MDA903-80-C-0194; DARPA Order 3831)
(AD-A098640; PR-80-27-312) Avail: NTIS HC A04/MF A01 CSCL 09/2

This report describes an effort to develop a prototype advisory decision aid (ADA). The three types of computerized decision aids used in problem-solving tasks can be described by three metaphors. One type of computer aid performs laborious tasks which the user would otherwise have to perform. Another type attempts to replace the user entirely and solves the problem alone. The third type of computer aid acts as an advisor. This decision aid has information about the problem and has procedures for making suggestions, but it does not solve the problem. That is left up to the user. As much as possible, it is desirable to place the functions of an advisor within computers. Such aids could be grafted onto data base management systems in an effort to help users cope with their information. In this capacity, the advisory aid is the natural extension of the HELP option being included in many operating systems. With time and continued improvements in our knowledge of artificial intelligence and computer-assisted decision making, advisory aids of a much more elaborate variety are likely to be available. Author (GRA)

N81-25726# Decisions and Designs, Inc., McLean, Va. Social Science Research Inst.
STRUCTURING AND JUDGMENT IN DECISION TECHNOLOGY Final Research Report
Ward Edwards, Richard S. John, and Detlof V. Winterfeldt Jan. 1981 28 p refs Sponsored in part by Decisions and Designs, Inc.
(Contract MDA903-80-C-0194)
(AD-A098617; SSRI-81-4) Avail: NTIS HC A03/MF A01 CSCL 09/2

This report summarizes 15 months of research on the technology of inference and decision, including topics such as: the quality and user acceptance of decision analysis performed by computer vs. analyst; the effect of hierarchical vs. non-hierarchical structures on MAU importance weights and ratings; and the relative impacts of group structure, source reliability, and datum diagnosticity on hierarchical inference judgments. The purpose of this report is to summarize findings and explain how they integrate into an overall program of research on decision technology. GRA

N81-26729# California Univ., Berkeley. Lawrence Berkeley Lab. Dept. of Computer Sciences and Applied Mathematics.
APPLICATION OF FUZZY SET THEORY TO DATA DISPLAY
W. H. Benson Dec. 1980 9 p refs Presented at Intern. Congr. on Appl. Systems Res., and Cybernetics, Acapulco, Mexico, 12 Dec. 1980
(Contract W-7405-eng-48)
(LBL-11590) Avail: NTIS HC A02/MF A01

Categorization supports decision making and lets an analyst look at data from different perspectives and different levels of detail. An approach to data analysis is described in which membership in subjectively defined categories is modeled by the fuzzy nature of color categories and presented by means of computer graphics for visual inspection by the analyst. DOE

N81-27975*# NASA Scientific and Technical Information Facility, Baltimore/Washington International Airport, Md. 21240.
NETWORKS AND EXTERNAL SOURCES OF INFORMATION, SECTION 12
Philip F. Eckert, Hal G. Wynne, W. A. Martin (ESA, Rome), and Angelo Bodini (ESA, Rome) In AGARD Manual of Doc. Pract. Appl. Defence-Aerospace Sci. and Tech. Inform., Vol. 4 Mar. 1981 p 93-110 refs Sponsored by NASA

Avail: NTIS HC A06/MF A01 CSCL 05B

The basic functional aspects of telecommunications, text searching, and networking are reviewed. Some of the information services, both commercial and noncommercial, which are operational in the United States and Europe are described. The

ARPANET, TELENET, TYMET, and EURONET packet networks are described. External online bibliographic data bases and factual data banks are reviewed. Details of services offered, specific topics available, and contact points are given for: (in the United States) the NASA/RECON, DOE/RECON, Defense RDT and E, Lockheed Information System (DIALOG), SDC ORBIT, and the bibliographic Retrieval systems; and (in Europe), ESA/IRS, the International Atomic Energy Agency, TELESYSTEMS, SPIDEL, INKA DIMDI DATA-STAR, BLAISE, and PERGAMON-INFOLINE systems. J.D.H.

N81-28448# California Univ., Livermore. Lawrence Livermore Lab.

PRECISION MACHINING COMMERCIALIZATION

1981 245 p refs

(Contract W-7405-eng-48)

(UCID-17948-Rev-1) Avail: NTIS HC A11/MF A01

The Precision Machining Commercialization Project (PMC) is described. The goal of PMC is to minimize precision machining development time and cost risk for interested vendors. The technology of high precision machining is based on a number of refinements of fundamental machining principles such as better slideways, more accurate spindles, better control systems, better thermal stability, isolation from vibration, application of the laser interferometer for closed-loop tool position control, and part handling and chucking with a sensitivity to fractions of micrometer tolerance. A critical element is the diamond tool bit, which cuts precisely in accordance with its geometry without the built-up edge characteristic of other tools, thus offering the potential of the mirror finish needed for optical parts. A special section covers the purchase, care, application, measuring and sharpening of diamond tool bits. DOE

N81-28738# Pennsylvania Univ., Philadelphia. Dept. of Decision Sciences.

MODEL MANAGEMENT SYSTEMS: AN APPROACH TO DECISION SUPPORT IN COMPLEX ORGANIZATIONS

Joyce J. Elam, John C. Henderson, and Louis W. Miller 4 Aug. 1980 41 p refs

(Contract N00014-75-C-0440)

(AD-A089339) Avail: NTIS HC A03/MF A01 CSCL 05/1

A system designed to extend the traditional decision support system (DSS) concept to support the model management requirements of complex organizations is described. The system's objectives are to provide a mechanism to represent and to diffuse the organization knowledge about models so that the user community can utilize this knowledge to adapt or build decision aids. E.A.K.

N81-29031# Texas Univ. at Arlington. Center for Energy Studies.

AN ANALYSIS OF FINANCIAL AND REGULATORY MODELS OF ELECTRIC UTILITIES

Alicia Torre Apr. 1981 62 p refs

(RR-12) Avail: NTIS HC A04/MF A01

Five financial and regulatory models were analyzed in terms of their use in a larger modelling project to measure conservation impact on utilities (CIUS). The five models are the Over/Under Capacity Planning Model (Over/Under), the Regulatory Analysis Model (RAM), the Electric Utility Policy and Planning Analysis Model (EPPAM), the Regionalized Electricity Model (REM), and the electric and Gas Utility Financial Simulation Model (ELFIN). No matter which model is used, certain modifications are necessary for use with CIUS. T.M.

N81-29286# Council for Scientific and Industrial Research, Pretoria (South Africa). Dept. of Numerical Control.

ECONOMICS OF NUMERICAL CONTROL MACHINING

Vaughan Hetem *In its* The 2nd Seminar on Efficient Metal Forming and Machining 18 Nov. 1980 12 p

Avail: NTIS HC A12/MF A01

Numerical controlled machines are showing good returns on investment when employed correctly. Typical productivity ratios are shown as well as benefits from indirect activities. An economic justification procedure is explained to ensure judgement analysis rather than a decision based on personal preferences. Author

N81-29851# National Research Inst. for Mathematical Sciences, Pretoria (South Africa).

AN INTERACTIVE GOAL-PROGRAMMING METHOD FOR NON-LINEAR MULTIPLE-CRITERIA DECISION-MAKING PROBLEMS

H. R. Weistroffer Sep. 1980 17 p refs

(CSIR-TWISK-175) Avail: NTIS HC A02/MF A01

An interactive goal-programming method is presented in which the constrained multiple-objective problem is converted into a sequence of unconstrained single-objective problems. The decision maker specifies a set of desired values for the objectives, and the deviation from these values is minimized in the least squares sense. At each iteration (i.e., after each unconstrained single-objective problem is solved) the decision maker is presented with the results and (if the present solution is not satisfactory) asked for which objectives he/she is willing to accept lower values than those specified earlier. The constraints are treated in the same way as the objectives, but their 'desired values' are kept fixed. It is shown that under suitable conditions the method converges to a Pareto-optimum. M.G.

N81-29902*# National Aeronautics and Space Administration, Langley Research Center, Hampton, Va.

AUTOMATED DECISION MAKING AND PROBLEM SOLVING. VOLUME 2: CONFERENCE PRESENTATIONS

Ewald Heer (Univ. of Southern California, Los Angeles) 1980 312 p refs Conf. held in Hampton, Va., 19-21 May 1980 2 Vol.

(NASA-CP-2180; L-14396-Vol-2)

Avail: NTIS

HC A14/MF A01 CSCL 12B

Related topics in artificial intelligence, operations research, and control theory are explored. Existing techniques are assessed and trends of development are determined.

N81-29903*# National Aeronautics and Space Administration, Washington, D. C.

NASA CROSSCUT STUDIES AND APPLICATIONS

William B. Gevarter *In* NASA. Langley Research Center Automated Decision Making and Probl. Solving. Vol. 2 1980 p 1-12

Avail: NTIS HC A14/MF A01 CSCL 12B

Automation structure items are listed under generic technology or application classes. Cross-out results, automation related development activities, automation opportunities, and the plan overview are listed. An outline of the proposed approach to developing an automation technology base is included. E.D.K.

N81-29904*# University of Southern California, Los Angeles.

A FRAMEWORK FOR AUTOMATED DECISION MAKING AND PROBLEM SOLVING

Ewald Heer *In* NASA. Langley Research Center. Automated Decision Making and Probl. Solving. Vol. 2 1980 p 13-38

Avail: NTIS HC A14/MF A01 CSCL 12B

Problems can be subdivided into two main categories: well structured problems and ill structured problems. The first require routine repetitive decisions which are generally amenable to programmable decision processes. The second require novel nonprogrammable decision processes. The decision making processes can be subdivided into those representative of those done by humans and those done by machine. Many of such decision processes require a combination of humans and machines. Automated decision making and problem solving technologies are expected to have their greatest potential impact in the space program. E.D.K.

N81-29905*# Purdue Univ., Lafayette, Ind.

INTELLIGENCE CONTROL SYSTEMS

George N. Saridis *In* NASA. Langley Research Center Automated Decision Making and Probl. Solving. Vol. 2 1980 p 39-76 refs

Avail: NTIS HC A14/MF A01 CSCL 12B

The evolution of ideas of intelligent controls and their application to high level man machine interactive systems like general purpose manipulators, industrial robots, prosthetic devices for amputees, and orthotic devices for paralyzed persons are discussed. Some case studies are presented to demonstrate the feasibility of the approach. E.D.K.

N81-29906*# Texas Univ., Austin.

DECENTRALIZED STOCHASTIC CONTROL

Jason L. Speyer *In* NASA. Langley Research Center Automated Decision Making and Probl. Solving. Vol. 2 1980 p 77-92

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refs

Avail: NTIS HC A14/MF A01 CSCL 12B

Decentralized stochastic control is characterized by being decentralized in that the information to one controller is not the same as information to another controller. The system including the information has a stochastic or uncertain component. This complicates the development of decision rules which one determines under the assumption that the system is deterministic. The system is dynamic which means the present decisions affect future system responses and the information in the system. This circumstance presents a complex problem where tools like dynamic programming are no longer applicable. These difficulties are discussed from an intuitive viewpoint. Particular assumptions are introduced which allow a limited theory which produces mechanizable affine decision rules. E.D.K.

N81-29907*# Massachusetts Inst. of Tech., Cambridge.
RESEARCH DIRECTIONS IN LARGE SCALE SYSTEMS AND DECENTRALIZED CONTROL

Robert R. Tenney /in NASA. Langley Research Center Automated Decision Making and Probl. Solving. Vol. 2 1980 p 93-125

Avail: NTIS HC A14/MF A01 CSCL 12B

Control theory provides a well established framework for dealing with automatic decision problems and a set of techniques for automatic decision making which exploit special structure, but it does not deal well with complexity. The potential exists for combining control theoretic and knowledge based concepts into a unified approach. The elements of control theory are diagrammed, including modern control and large scale systems. E.D.K.

N81-29908*# University of Central Florida, Orlando.
SYSTEMS MODELING PAST, PRESENT, AND FUTURE AS VIEWED FROM A NETWORK MODELING PERSPECTIVE
Gary E. Whitehouse /in NASA. Langley Research Center Automated Decision Making and Probl. Solving. Vol. 2 1980 p 127-168 refs

Avail: NTIS HC A14/MF A01 CSCL 12B

The general area of stochastic networks is discussed with emphasis on the graphical evaluation and review techniques (GERT). This is a procedure which combines the disciplines of flowgraph theory moment generating functions, and PERT to obtain the solution to stochastic problems. E.D.K.

N81-29910*# North Carolina State Univ., Raleigh.
SEQUENTIAL DECISION MAKING AND STOCHASTIC NETWORKS

Salah Elmaghraby /in NASA. Langley Research Center Automated Decision Making and Probl. Solving. Vol. 2 1980 p 197-211

Avail: NTIS HC A14/MF A01 CSCL 12B

To solve the problems inherent in working with sequential decision processes, it is proposed to (1) utilize concepts of dominance through bounding in the decision processes (DP) formalism to reduce the amount of computing required. This advocates the marrying of DP recursion and Branch-and-Bound methodology; and (2) relax the requirement of strict optimality in the search over the state space, and be content with a tolerable error. S.F.

N81-29912*# Stanford Univ., Calif.
PROBLEM SOLVING WITH UNCERTAIN KNOWLEDGE
Bruce Buchanan /in NASA. Langley Research Center Automated Decision Making and Probl. Solving. Vol. 2 1980 p 245-266

Avail: NTIS HC A14/F A01 CSCL 12B

Systems capable of expert level performance are built. The system represents domain-specific knowledge such as knowledge about geology, medicine, etc., and enables a process in which it uses such knowledge in an understandable line of reasoning. The MYCIN system, one example of such a system, is used as illustration. S.F.

N81-29914*# Arizona Univ., Tucson.
HUMAN PERFORMANCE CHARACTERISTICS IN RELATION TO AUTOMATED DECISION MAKING AND PROBLEM SOLVING
William R. Ferrell /in NASA. Langley Research Center Automated

Decision Making and Probl. Solving. Vol. 2 1980 p 293-313 refs

Avail: NTIS HC A14/MF A01 CSCL 12B

The ways in which human characteristics and especially human limitations provide input for the design of automated problem solving and decisions making systems are explored. S.F.

N81-30889*# National Aeronautics and Space Administration. Langley Research Center, Hampton, Va.

AUTOMATED DECISION MAKING AND PROBLEM SOLVING. VOLUME 1: EXECUTIVE SUMMARY

Ewald Heer Aug. 1981 55 p refs Conf. held at Hampton, Va., 19-21 May 1980 2 Vol.
(NASA-CP-2180; L-14396) Avail: NTIS HC A04/MF A01 CSCL 12B

The May 1980 conference is summarized. Related topics in artificial intelligence, operations research, and control theory were explored. Existing techniques were assessed, trends of development determined, and potential for application in NASA automation technology programs were identified. Formal presentations were made by experts in the three disciplines and a workshop was held in which current technology in automation and possible NASA interfaces with the academic community to advance this technology were discussed. J.D.H.

N81-31559*# Massachusetts Inst. of Tech., Cambridge. Lab. for Information and Decision Systems.

SEQUENTIAL DECISION RULES FOR FAILURE DETECTION

Edward Y. Chow (Schlumberger-Doll Research, Ridgefield, Conn.) and Alan S. Willsky Jul. 1981 12 p refs
(Grant NGL-22-009-124; Contract N00014-77-C-0224; NR Proj. 041-516)
(NASA-CR-164847; AD-A102025; LIDS-P-1109) Avail: NTIS HC A02/MF A01 CSCL 12A

The formulation of the decision making of a failure detection process as a Bayes sequential decision problem (BSDP) provides a simple conceptualization of the decision rule design problem. As the optimal Bayes rule is not computable, a methodology that is based on the Bayesian approach and aimed at a reduced computational requirement is developed for designing suboptimal rules. A numerical algorithm is constructed to facilitate the design and performance evaluation of these suboptimal rules. The result of applying this design methodology to an example shows that this approach is a useful one. Author (GRA)

N81-31847*# Illinois Univ., Urbana. Coordinated Science Lab.

PILOT INTERACTION WITH AUTOMATED AIRBORNE DECISION MAKING SYSTEMS Final Report, Nov. 1975 - Aug. 1981

William B. Rouse Aug. 1981 28 p refs
(Grant NsG-2119)
(NASA-CR-164729; T-106) Avail: NTIS HC A03/MF A01 CSCL 05H

The role of the pilot and crew for future aircraft is discussed. Fifteen formal experimental studies and the development of a variety of models of human behavior based on queueing history, pattern recognition methods, control theory, fuzzy set theory, and artificial intelligence concepts are presented. L.F.M.

N81-32179*# Kearney (A. T.) and Co., Inc., Chicago, Ill.
DESIGN REQUIREMENTS FOR SRB PRODUCTION CONTROL SYSTEM. VOLUME 1: STUDY BACKGROUND AND OVERVIEW Final Report

[1981] 42 p refs 5 Vol.
(Contract NAS8-34207)
(NASA-CR-161861; G-402-Vol-1) Avail: NTIS HC A03/MF A01 CSCL 22B

The solid rocket boosters assembly environment is described in terms of the constraints it places upon an automated production control system. The business system generated for the SRB assembly and the computer system which meets the business system requirements are described. The selection software process and modifications required to the recommended software are addressed as well as the hardware and configuration requirements necessary to support the system. J.M.S.

N81-32180*# Kearney (A. T.) and Co., Inc., Chicago, Ill.
DESIGN REQUIREMENTS FOR SRB PRODUCTION

CONTROL SYSTEM. VOLUME 2: SYSTEM REQUIREMENTS AND CONCEPTUAL DESCRIPTION Final Report

[1981] 265 p refs 5 Vol.

(Contract NAS8-34207)

(NASA-CR-161862; G-402-Vol-2)

Avail: NTIS

HC A12/MF A01 CSCL 22B

In the development of the business system for the SRB automated production control system, special attention had to be paid to the unique environment posed by the space shuttle. The issues posed by this environment, and the means by which they were addressed, are reviewed. The change in management philosophy which will be required as NASA switches from one-of-a-kind launches to multiple launches is discussed. The implications of the assembly process on the business system are described. These issues include multiple missions, multiple locations and facilities, maintenance and refurbishment, multiple sources, and multiple contractors. The implications of these aspects on the automated production control system are reviewed including an assessment of the six major subsystems, as well as four other subsystem. Some general system requirements which flow through the entire business system are described. J.M.S.

N81-32181*# Kearney (A. T.) and Co., Inc., Chicago, Ill. DESIGN REQUIREMENTS FOR SRB PRODUCTION CONTROL SYSTEM. VOLUME 3: PACKAGE EVALUATION, MODIFICATION AND HARDWARE Final Report

[1981] 101 p refs 5 Vol.

(Contract NAS8-34207)

(NASA-CR-161863; G-402-Vol-3)

Avail: NTIS

HC A06/MF A01 CSCL 22B

The software package evaluation was designed to analyze commercially available, field-proven, production control or manufacturing resource planning management technology and software package. The analysis was conducted by comparing SRB production control software requirements and conceptual system design to software package capabilities. The methodology of evaluation and the findings at each stage of evaluation are described. Topics covered include: vendor listing; request for information (RFI) document; RFI response rate and quality; RFI evaluation process; and capabilities versus requirements. J.M.S.

N81-32182*# Kearney (A. T.) and Co., Inc., Chicago, Ill. DESIGN REQUIREMENTS FOR SRB PRODUCTION CONTROL SYSTEM. VOLUME 4: IMPLEMENTATION Final Report

[1981] 147 p refs 5 Vol.

(Contract NAS8-34207)

(NASA-CR-161864; G-402-Vol-4)

Avail: NTIS

HC A07/MF A01 CSCL 22B

The implementation plan which is presented was developed to provide the means for the successful implementation of the automated production control system. There are three factors which the implementation plan encompasses: detailed planning; phased implementation; and user involvement. The plan is detailed to the task level in terms of necessary activities as the system is developed, refined, installed, and tested. These tasks are scheduled, on a preliminary basis, over a two-and-one-half-year time frame. J.M.S.

N81-32183*# Kearney (A. T.) and Co., Inc., Chicago, Ill. DESIGN REQUIREMENTS FOR SRB PRODUCTION CONTROL SYSTEM. VOLUME 5: APPENDICES Final Report

[1981] 100 p refs 5 Vol.

(Contract NAS8-34207)

(NASA-CR-161865; G-402-Vol-5)

Avail: NTIS

HC A05/MF A01 CSCL 22B

A questionnaire to be used to screen potential candidate production control software packages is presented. J.M.S.

N81-32868# Purdue Univ., Lafayette, Ind. Lab. for Applied Industrial Control. MAN-MACHINE SIMULATIONS IN INDUSTRIAL SYSTEMS. VOLUME 1: NARRATIVE M.S. Thesis

Gary Irving Davis and James R. Buck Dec. 1980 277 p refs (Contract DE-AS07-80CS-40361; Grant NSF APR-73-07822)

(DE81-027882; DOE/CS-40361/T6-Vol-1) Avail: NTIS

HC A13/MF A01

Computer simulation is discussed and an alternative to methodologies upon relied. The development of computer simulation models suitable for representing human operators in industrial process simulations are developed and presented. Use of these models is demonstrated through the use of a particular simulation technique entitled, 'Systems Analysis of Integrated Networks of Tasks' (SAINT). This simulation pseudo-language is a combination network modeling and simulation technique designed for the analysis of man-machine systems is provided as well as a review of the literature on simulation of man-machine systems. The development of the human operator models (referred to as Smart SAINT) and their use as a design aid is described. DOE

N81-33093# Polytechnic Inst. of New York, Brooklyn. INFORMATION PROCESSING IN MAN-MACHINE SYSTEMS

Prodip Sen and R. F. Drenick 1980 19 p refs Prepared jointly with Polysystems Analysis Corp.

(Contract DE-AC01-80RA-50259)

(DE81-025134; DOE/RA-50259/T1)

Avail: NTIS

HC A02/MF A01

The human decision maker in an organization can be treated as an adaptive information channel (i.e., a channel with nonconstant processing times), especially in high data rate environments such as C(3) systems. A framework for treating information transmission through such adaptive channels is developed and some basic results are presented. A model of a human decision maker in an organization is also developed within this framework. DOE

N81-33936# Cornell Univ., Ithaca, N. Y. School of Operations Research and Industrial Engineering. MULTIPLE-DECISION SELECTION AND RANKING PROCEDURES Final Report, 1 Nov. 1979 - 31 Jul. 1981

Robert E. Bechhofer 31 Jul. 1981 13 p refs

(Contract DAAG29-80-C-0036)

(AD-A103687; ARO-16322.10-M)

Avail: NTIS

HC A02/MF A01 CSCL 12/1

This report lists papers that deal with research on the subject of 'Statistical multiple-decision ranking and selection procedures,' a statistical methodology pioneered by the Principal Investigator and several colleagues; some of the papers deal with related statistical techniques. Interest in this subject continues to grow as is evidenced by the large number of published papers in this area, and by the appearance in the last few years of three textbooks devoted exclusively to this subject. GRA

N81-34060# Wisconsin Univ. - Madison. Mathematics Research Center. THE SUBJECTIVIST VIEW OF DECISION-MAKING Technical Summary Report

Dennis V. Lindley Jul. 1981 34 p refs

(Contract DAAG29-80-C-0041)

(AD-A103879; MRC-TSR-2248)

Avail: NTIS

HC A03/MF A01 CSCL 12/1

The subjectivist, Bayesian paradigm for a decision-maker is described. It is shown how the notion of utility, and the principle of maximizing expected utility both depend on the description of uncertainty through probability. The justification for the necessity of this description due to de Finetti is outlined. The twin, practical problems of the evaluation of the decision-maker's probabilities and utilities are discussed. Probability, as used in the paradigm, is a subjectivist notion which is distinct from the chance, or frequentist, concept and there is discussion of this difference. The calculations for the analysis of a decision tree are described and the notions of the utility of data developed. The statistical analysis of data that flows from the paradigm is described and the basic, likelihood principle derived and discussed. The material is illustrated by a simple example from insurance. Author (GRA)

N81-34080# British Library Lending Div., Boston Spa (England). THE NEGLECTED RESOURCE: NON-USAGE OF LIBRARY-INFORMATION SERVICES IN INDUSTRY AND COMMERCE

Margaret Slater 1981 72 p refs

(BLL-BLRDR-5628; ISBN-0-85142-145-8;

ASLIB-Occasional-Publ-25) Avail: British Library Lending Div.,

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Boston Spa, Engl.

A small-scale exploratory study of sub-optimal usage of industrial and commercial library information services was carried out. Nonuse, misuse (and even abuse) were examined from the viewpoint of unit managers. The reality (nature and extent) of any nonusage problem, also the feasibility and utility of further investigation were assessed.

J.M.S.

RELIABILITY AND QUALITY CONTROL

Includes risks, safety, failure analysis, warranties, guarantees, and maintenance.

A81-11309 Tables for the construction of matched single, double, and multiple sampling plans with application to MIL-STD-105D. E. G. Schilling and L. I. Johnson (General Electric Co., Lighting Business Group, Cleveland, Ohio). *Journal of Quality Technology*, vol. 12, Oct. 1980, p. 220-229. 15 refs.

A81-13413 * Midair collisions - The accidents, the systems, and the Realpolitik. E. L. Wiener (Miami University, Coral Gables, Fla.). *Human Factors*, vol. 22, Oct. 1980, p. 521-533. 42 refs. NASA-supported research.

Two midair collisions occurring in 1978 are described, and the air traffic control system and procedures in use at the time, human factors implications and political consequences of the accidents are examined. The first collision occurred in Memphis and involved a Falcon jet and a Cessna 150 in a situation in which the controllers handling each aircraft were not aware of the presence of the other aircraft until it was too late. The second occurred in San Diego four months later, when a Boeing 727 on a visual approach struck a Cessna 172 from the rear. Following the San Diego collision there arose a great deal of investigative activity, resulting in suggestions for tighter control on visual flight rules aircraft and the expansion of positive control airspace. These issues then led to a political battle involving general aviation, the FAA and the Congress. It is argued, however, that the collisions were in fact system-induced errors resulting from an air traffic control system which emphasizes airspace allocation and politics rather than the various human factors problems facing pilots and controllers. A.L.W.

A81-16202 Safety training methods. J. B. ReVelle. New York, Wiley-Interscience, 1980. 258 p. 44 refs. \$24.95.

The book provides information necessary for the design, implementation and monitoring of occupational safety training programs. The place of the safety training program within a company is discussed, and the practical aspects of safety and health training programs are considered. OSHA safety and health training requirements are examined, together with the role of the supervisor in safety training and means of training in the keeping of safety records. Consideration is then given to training for specific safety problems, including fires and obstacles, to meet OSHA and other inspection requirements. Medical and first aid training and the evaluation of the effectiveness of safety training programs are also discussed. A.L.W.

A81-16672 Principles of screening and cost effective product assurance. C. M. Ryerson (Hughes Aircraft Co., El Segundo, Calif.). *Microelectronics and Reliability*, vol. 20, no. 5, 1980, p. 693-715.

From the introduction of the term as an industrial rigor many years ago, the purpose of Product Assurance has been to provide visibility of manufacturing status and trends as an aid to management in 'doing it right as soon as possible', if not the first time. Forty years of experience by the author in analyzing the reasons for success or failure of specific program controls and approaches has resulted in a mass of well established principles and techniques. This report represents an extension of a long series of efforts to identify and come to grips with the factors basic to the achievement of maximum reliability in manufactured products. This is believed to be a vital link in putting visibility and understanding on the basic principles of screening and cost effective product assurance. (Author)

A81-19283 Establishing fusion component failure limits through availability goals. G. M. Fuller and H. S. Zahn (McDonnell Douglas Astronautics Co., St. Louis, Mo.). In: Symposium on Engineering Problems of Fusion Research, 8th, San Francisco, Calif., November 13-16, 1979, Proceedings. Volume 4.

Piscataway, N.J., Institute of Electrical and Electronics Engineers, Inc., 1979, p. 2236-2240.

Scheduled and unscheduled maintenance downtimes are allocated to availabilities representing levels desired for a commercial fusion power system (75%) and experimental fusion devices (50% and 25%) representative of ETF or INTOR. Critical path scheduled activities are defined. These consist of replacing failed redundant components, replacement of life limited components, and allowances for maintenance equipment failures. Components whose failure would shut down the reactor are identified and permissible failure frequencies are assigned which, in combination with the downtimes required to repair/replace, account for the total unscheduled downtime budget. Eleven components were found to account for 75% of all of the allowable unscheduled downtime. (Author)

A81-19491 Solid-state power system use expands. P. J. Klass. *Aviation Week and Space Technology*, vol. 114, Jan. 12, 1981, p. 70, 71, 73.

Variable-speed constant-frequency (VSCF) systems for supplying aircraft electric power are challenging more traditional hydro-mechanical constant-speed type systems for military applications after nearly two decades of development. The potential appeal of VSCF is the reduction of moving parts, which holds promise of higher reliability and reduced maintenance. It also offers more precise control of frequency and voltage, and responds more quickly to large electric load changes to minimize voltage and frequency transients. The operational payoff in terms of increased avionics reliability is difficult to measure, however. This paper examines applications of VSCF, with particular attention given to the 40-kva system that Westinghouse will supply for the F-5G (the system is expected to be scaled-up version of its 20-kva dc link system designed for the AV-8B). P.T.H.

A81-20104 World Conference on Non-destructive Testing, 9th, Melbourne, Australia, November 19-23, 1979. Conference sponsored by the International Committee for Nondestructive Testing. Parkville, Victoria, Australia, Australian Institute for Non-destructive Testing, 1980. 1834 p. Price of ten volumes, \$94.37.

Nondestructive testing standards are used to promote uniform and reproducible inspection results and to demonstrate acceptable levels of product quality. NDT standards based largely on empirical methods and on practical considerations successfully narrow the gap between idealized simple models and real inspection problems. These concepts are discussed and illustrated by examples drawn from current national and international standards for radiography, ultrasonics, and other NDT techniques. B.J.

A81-20106 # Recent developments in non-destructive testing. M. Onoe (Tokyo University, Tokyo, Japan). In: World Conference on Non-destructive Testing, 9th, Melbourne, Australia, November 19-23, 1979, Plenary Lectures. Parkville, Victoria, Australia, Australian Institute for Nondestructive Testing, 1980. 14 p. 40 refs.

The work of the Japanese Society for Nondestructive Inspection is reviewed. Attention is given to the quantitative evaluation of defects, ultrasonic visualization, integrity assurance, and automated inspection systems for steel production lines. B.J.

A81-20190 # The nondestructive testing of space age electronic parts. P. Dick (General Electric Co., Space Div., Valley Forge, Pa.). In: World Conference on Non-destructive Testing, 9th, Melbourne, Australia, November 19-23, 1979, Sessions 1A, 1B, 4F, 4K, and 4J(1-3). Parkville, Victoria, Australia, Australian Institute for Nondestructive Testing, 1980. (1A-8). 14 p.

General Electric's experience over an almost two-decade period with the NDT of electronic piece parts used in space systems products is described. Attention is given to high-reliability electronic parts test requirements, product applications, the concept of parts management, and reliability requirements and predictions. Quality assurance during production is examined, with emphasis on change control, the use of SEM, optical inspections, NDT during production, and burn-in cycles. Consideration is also given to receiving inspections and tests, receiving inspection statistics, and parts build-up testing. B.J.

06 RELIABILITY AND QUALITY CONTROL

A81-24079 # Fundamental studies on the control of turbulent boundary layers. I - Theoretical and experimental analyses of velocity profiles and parameters with and without adverse pressure gradient, with uniform suction through a porous flat plate. T. Maeda, H. Yamaguchi, M. Ota, and N. Hirayama (Tokyo Metropolitan University, Tokyo, Japan). *JSME, Bulletin*, vol. 23, Dec. 1980, p. 1967-1974. 15 refs.

This paper presents theoretical and experimental analyses of turbulent boundary layer velocity profiles and the boundary layer parameters. This work clarifies the influence of adverse pressure gradients and the effect of the boundary layer control by uniform suction on the boundary layer. A continuous velocity profile from a sublayer to an inner layer is obtained by developing the damping factor of a mixing length to the boundary layer with suction. The velocity profile in an outer layer is determined theoretically by extending a theory on the assumption of intermittency phenomena at the outer layer with adverse pressure gradient and uniform suction. The results of theoretical calculation are in good agreement with the experimental data. (Author)

A81-24251 Annual Reliability and Maintainability Symposium, Philadelphia, Pa., January 27-29, 1981, Proceedings. Symposium sponsored by IEEE, ASQC, IES, AIAA, ASME, AIIE, S.O.L.E., SSS, and SRE. New York, Institute of Electrical and Electronics Engineers, Inc., 1981. 496 p. Members, \$24.; non-members, \$32.

The symposium focused on mechanical design reliability, design for supportability, computer-aided design analysis and manufacturing, energy systems, equipment readiness, and reliability in nuclear power plants. Papers were presented on a new cumulative damage model for fatigue, effective test planning for growth test time, RADC ORACLE, and design tradeoffs in availability warranties. In addition, topics included gasification combined cycle R&A assessment, auto-ND-tested solder short-free solder joints, and computer suites for system performance, reliability, and availability. A.T.

A81-24259 # RADC ORACLE. J. Klion and G. W. Lyne (USAF, Rome Air Development Center, Griffiss AFB, N.Y.). In: Annual Reliability and Maintainability Symposium, Philadelphia, Pa., January 27-29, 1981, Proceedings. New York, Institute of Electrical and Electronics Engineers, Inc., 1981, p. 81-85.

The RADC ORACLE software program for reliability predictions mechanizes the implementation of MIL-HDBK-217 (Reliability Prediction of Electronic Equipment). The program develops data inputs by questionnaires on part numbers and types, stress, temperature, checks the inputs for correctness, and automatically records the results in data files. The reliability engineer makes predictions taking into account the equipment components and modules of printed circuits and assemblies, part dependent parameters such as resistance, capacitance, failure rate models, and contingency operations. The predictions include failure rates, PI factors, and application parameter data keyed to each part. A.T.

A81-24264 A data information system for RIW contracts. A. J. Glaser (Westinghouse Electric Corp., Baltimore, Md.). In: Annual Reliability and Maintainability Symposium, Philadelphia, Pa., January 27-29, 1981, Proceedings. New York, Institute of Electrical and Electronics Engineers, Inc., 1981, p. 139-143.

The Reliability Improvement Warranty (RIW) data/information program was designed to process and report configurations, reliability, and repair data collected during the warranty period of the F-16 Fire Control Radar. The operational system used a 2000 Intel Systems software. It was found that top management support and resource commitment of an authoritative data base administrator are required, that effective and continuous communication between the RIW contractor and the computer subcontractor is mandatory, and that the system will be effective provided on-the-job training of data center personnel and proper discipline of data input programmers are available. A.T.

A81-24266 Increased productivity with Predetermined Time Systems. J. Rose and J. A. Davolt (Boeing Commercial Airplane Co., Seattle, Wash.). In: Annual Reliability and Maintain-

ability Symposium, Philadelphia, Pa., January 27-29, 1981, Proceedings. New York, Institute of Electrical and Electronics Engineers, Inc., 1981, p. 193-198.

The use of Predetermined Time Systems (PTS) will enhance maintainability in new airplane design and will assist the operator in planning maintenance. Maintenance tasks analysis using PTS early in design highlights details that increase or decrease maintenance time. Maintenance task time derived using PTS during final design configuration can provide airlines with a standard for future maintenance management and planning. The Airplane Maintenance Engineered Time Standards (AMETS) system developed by Boeing is based on previously proven PTS: Method-Time-Measurement (MTM), General Purpose Data (GPD), MultiPurpose Data (MPD), and Elemental Standard Omnipurpose Data (ESD). The AMETS system, a set of high-level data specifically designed for commercial airplane maintenance tasks, assists in providing an efficient way to evaluate new airplane design for maintenance and provides airline maintenance planners with a detailed standard that can be quickly modified to fit a specific facility. AMETS aids in setting the goals required to improve design and increase maintenance productivity. (Author)

A81-24267 Increased productivity through planned screens. I. Quart (Hughes Aircraft Co., Reliability Dept., Culver City, Calif.). In: Annual Reliability and Maintainability Symposium, Philadelphia, Pa., January 27-29, 1981, Proceedings.

New York, Institute of Electrical and Electronics Engineers, Inc., 1981, p. 299-303. 6 refs.

The Hughes F-15 and F-18 radar environmental screening programs provide monitoring and correction action for maximum reliability at minimum cost. The program assumes that flaws are latent failures due to design, workmanship, and material defects; that a screen is the application of stress to precipitate failures at a convenient time; and that flaws eliminated by a learning process are theoretically nonrecurrent, while flaws removed by the screening process may exist in subsequent equipment. The classical learning curve model of Gallagher (1965) is used, to construct LOOK AHEAD, CREDIT, and AFAR screening models. Finally, the number of failures for a particular screen is taken into account by the detection efficiency parameter, and the environmental severity rate is determined by an expression which includes cycle duration, temperature, and vibration terms. A.T.

A81-24268 The new look in reliability - It works. J. D. McGrath and R. J. Freedman (General Electric Co., Aerospace Control Systems Dept., Binghamton, N.Y.). In: Annual Reliability and Maintainability Symposium, Philadelphia, Pa., January 27-29, 1981, Proceedings. New York, Institute of Electrical and Electronics Engineers, Inc., 1981, p. 304-309.

The Operational Mission Environment (OME) test program for the F/A-18 Hornet fighter/attack aircraft defines the manufacturing methods needed to assure reliability. The design phase analyzed reliability predictions, thermal conditions, stress concentrations, and failure modes; 'the worst case' analysis insured that the tolerance buildup in any signal path will not adversely affect system performance, and the integrated test phase included engineering development testing and flight worthiness trials. The manufacturing stage involved the SENTRY VIII IC tester and environmental handler, a printed circuit board for automatic integrated circuits and axial lead inserters, and maintained a formal defect trend analysis. A.T.

A81-24277 The necessity of 'testing-in' hardware reliability. H. Caruso (Westinghouse Electric Corp., Baltimore, Md.). In: Annual Reliability and Maintainability Symposium, Philadelphia, Pa., January 27-29, 1981, Proceedings. New York, Institute of Electrical and Electronics Engineers, Inc., 1981, p. 381-383.

Using the broad concept of reliability as an achieved result, this paper examines the practical limitations of reliability design and the role of 'tested-in reliability' in achieving design expectations. Reliability design is treated as providing only the potential for high field reliability which will not be attained without the coordinated use of reliability testing and other supporting disciplines. The possible penalties of interacting test effectiveness and delivery date

variables are examined. A real example of potential cost savings due to tested-in reliability is presented. (Author)

A81-24279 **Growth Test Time - Key to effective test planning.** D. Koo (Westinghouse Electric Corp., Baltimore, Md.). In: Annual Reliability and Maintainability Symposium, Philadelphia, Pa., January 27-29, 1981, Proceedings. New York, Institute of Electrical and Electronics Engineers, Inc., 1981, p. 389-394. 5 refs.

Reliability Growth Test Time is a key issue in any system test program requiring or proposing dedicated growth testing as a means to achieving the program reliability objective. Schedule time, financial resources, system assets, must be carefully evaluated in terms of the reliability gain to be achieved by the test program. The test time required to achieve a given level of reliability through growth testing becomes a valuable planning tool in this context. The methodology presented in this paper should allow the test planner to establish the growth test time required to achieve the program reliability objectives either by directly using or modifying the available test data of a similar system. (Author)

A81-24280 **Development of conceptual Navy aircraft Reliability Prediction Models.** D. Ferguson, J. Kolson, J. Stracener (Vought Corp., Dallas, Tex.), and S. Meek (U.S. Navy, Naval Air Systems Command, Washington, D.C.). In: Annual Reliability and Maintainability Symposium, Philadelphia, Pa., January 27-29, 1981, Proceedings. New York, Institute of Electrical and Electronics Engineers, Inc., 1981, p. 395-401.

The development of Reliability Prediction Models, which provide an objective means for evaluating the baseline reliability characteristics of conceptual Navy fixed wing and rotary wing aircraft is described. Each model consists of a set of equations which relate the reliability of each major aircraft subsystem, expressed as the Mean Flight Hours Between Failures (MFHBF), to aircraft design/performance parameters. The equations of each model were statistically derived from historical data for 32 fixed wing and 11 rotary wing Navy/Marine Corps aircraft. The predicted MFHBF of each subsystem is consistent with subsystems currently in operational use by the Navy, so that adjustment factors must be applied to accommodate anticipated effects of future technological, managerial, and operational influences. The Reliability Prediction Models were applied by the Navy to evaluate the reliability characteristics of aircraft designs during the Sea Based Air Master Study (SBAMS), ranging from low speed multipurpose to high performance specialized mission conceptual aircraft. (Author)

A81-24283 **Current and future concepts in FMEA.** F. Sevcik (Ketrion, Inc., Wayne, Pa.). In: Annual Reliability and Maintainability Symposium, Philadelphia, Pa., January 27-29, 1981, Proceedings. New York, Institute of Electrical and Electronics Engineers, Inc., 1981, p. 414-421.

The goal of the Failure Modes and Effects Analysis (FMEA) is to anticipate, identify and avoid failures in the operation of a new system while the system is still on the drawing board. The recent occurrence of failures in some new systems in operation has had disastrous effects on many lives. These events prompted the author to evaluate the documented problems and to seek improvements in FMEA procedures and their application. The result was surprising. While a great number of procedures exist, not one single FMEA procedure could be found as an all encompassing document. Each FMEA procedure was different. It is believed that the recent disasters could have possibly been avoided if a good FMEA procedure had been applied during development. A simple, complete FMEA procedure is proposed. (Author)

A81-25087 **Coupling Ocean Thermal Energy Conversion technology /OTEC/ with nuclear power plants.** M. K. Goldstein (JGC Corp., Yokohama, Japan), D. Rezachek, and C. S. Chen (Hawaii, University, Honolulu, Hawaii). In: Alternative energy sources II; Proceedings of the Second Miami International Conference, Miami Beach, Fla., December 10-13, 1979. Volume 4. Washington, D.C., Hemisphere Publishing Corp., 1981, p. 1875-1892. 12 refs.

The use of an Ocean Thermal Energy Conversion Related Bottoming Cycle (ORBC) to recover the waste heat generated by a large nuclear or fossil power plant is considered. To take advantage of an ORBC, a plant must be located close to cold, deep ocean water,

either open-ocean or shore-based. The ORBC can also be retrofitted to existing shore-based nuclear plants or it can be a part of the design of future plants. The increased efficiency of a nuclear floating system due to the ammonia bottoming cycle and ORBC systems is shown for the example of the proposed facility in Murata, Japan. It is noted that the size of the heat exchangers and the diameter of the cold water pipe would be relatively smaller for an ORBC than for a conventional ocean thermal energy conversion system. L.S.

A81-26372 **On the dynamic optimal coupling of a solar cell array to a load and storage batteries.** A. Braunstein and Z. Zinger (Tel Aviv University, Tel Aviv, Israel). (Institute of Electrical and Electronics Engineers, Summer Meeting, Minneapolis, Minn., July 13-18, 1980.) IEEE Transactions on Power Apparatus and Systems, vol. PAS-100, Mar. 1981, p. 1183-1188. 13 refs.

A new and more accurate approach to the design of solar cell arrays is presented, based on the analysis of solar cell connections within the array. The method of determining the optimum point is based on the coupling of the load to the solar cell array by means of a two-port with DC transformer characteristics, and in addition defines the optimum way of charging the batteries, given varying load characteristics, radiation levels, and other operational conditions. O.C.

A81-28475 **Jet engine maintenance and reliability programs - Objectives and management (Les programmes de maintenance et de fiabilité réacteurs - Objectifs et management).** J. A. Aguer (Compagnie Nationale Air France, Paris, France). L'Aéronautique et l'Astronautique, no. 85, 1980, p. 59-69. In French.

Consideration is given to policies of jet engine maintenance and the management of the programs set up for this purpose. The objectives, philosophies and characteristics of maintenance undertaken on the level of propulsion reliability programs specific to each user consisting of official maintenance regulations and maintenance programs specific to each aircraft and user which consist of practical guidelines for the execution and planning of maintenance procedures are reviewed. The evolution of maintenance policies in Europe and the U.S. over the past 20 years from those of fixed general replacement schedules to phase II maintenance according to state and research on component utilization limits is traced. Considerations of the increasing complexity of jet engines, the monitoring of engine performance and cost effectiveness in the management of engine maintenance programs are presented, and objectives of work in the improvement of engine reliability is discussed, with attention given to the service life of high-pressure turbine blades, reduced thrust operation, and the deterioration of jet engine performance. A.L.W.

A81-32393 **Modern accident investigation and analysis - An executive guide.** T. S. Ferry (Southern California University, Los Angeles, Calif.). New York, Wiley-Interscience, 1981. 293 p. 100 refs. \$28.

The first part of the book primes the reader for mishap investigation. Three chapters lead into the serious business of investigation through a discussion of the need for and examination of who has a stake in investigation. This is followed by coverage of the preparation that makes an efficient investigation possible. Finally a description is presented of the first important steps in the investigation, conducted at the scene of a mishap. The interacting roles of man, environment, and systems are examined, taking into account unsafe acts, human limitations, the various types of environments, different types of materials, and aspects of systems investigation. Attention is also given to analytical techniques, the mishap report, information collection, and legal aspects of investigation. G.R.

A81-34165 **Methods for the verification and validation of digital flight control systems.** W. E. Larsen (FAA, Moffett Field, Calif.). Society of Automotive Engineers, Aerospace Congress and Exposition, Los Angeles, Calif., Oct. 13-16, 1980, Paper 801134. 7 p.

A NASA/FAA/Aerospace industries program concerned with the improvement of regulatory government agencies' understanding of airborne digital systems assurance technology, and with the evaluation and improvement of the tools and methods of this technology, is described. A near-term, representative digital flight control system is used to evaluate the tools and methods developed.

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The experimental facility used incorporates aircraft, sensor actuator and environmental models, automated software verification tools, and hardware verification and system validation tools, and is able to undertake such tasks as failure effect evaluation and electrical power disturbance effects on Reconfigurable Digital Flight Control Systems (RDFCS), in addition to maintaining a criteria data base. O.C.

A81-34316 **System-reliability effort at the Indian Space Research Organisation.** R. Aravamudan and J. Raja (Indian Space Research Organization, Vikram Sarabhai Space Centre, Trivandrum, India). *IEEE Transactions on Reliability*, vol. R-30, Apr. 1981, p. 11-14.

The organization and scope of reliability and quality assurance efforts at the Indian Space Research Organization (ISRO) are described. Attention is also given to the implementation of the reliability program plan and to the major ISRO test and evaluation facilities. B.J.

A81-43050 **Integral nonlinearity diagnostics of electronic components /Review/.** G. B. Serdiuk. (*Avtomatika i Telemekhanika*, no. 12, Dec. 1980, p. 132-156.) *Automation and Remote Control*, vol. 41, no. 12, May 20, 1981, pt. 2, p. 1730-1748. 104 refs. Translation.

Integral diagnostics using the nonlinearities in the active media of the electronic components being tested is reviewed. Direct and indirect methods for determining the nonlinearity of the functional characteristics are evaluated, with the object of using the nonlinearities as phenomenological diagnostic parameters that reflect the technical state of the components. Some examples of nonlinearity testing of electronic components are considered, pinpointing latent defects and providing early warning of impending failure. Possible applications of integral nonlinearity diagnostics in quality control systems are examined. (Author)

A81-43366 **Optimal inspection policy for multistage production process with alternate inspection plans.** A. Gupta (Government College of Engineering, Ujjain, India) and H. Gupta (Roorkee, University, Roorkee, India). *IEEE Transactions on Reliability*, vol. R-30, June 1981, p. 161, 162. 5 refs.

This paper considers a multistage production process with alternate inspection plans. At each stage a number of alternate inspection plans with different cost and reliabilities may be available. Since more reliable inspections are more costly it is essential to find out a compromise between the reliability and cost. A mathematical model is developed. Dynamic programming is used to determine at each stage that out of the available inspection plans (including the case of no inspection) which one will result in minimum s-expected total cost per item. (Author)

A81-46482 # **MIL-STD-781D - A standard for integrated testing.** W. E. Wallace, Jr. (U.S. Navy, Naval Electronic Systems Command, Washington, DC) and C. Sontz (Sontz Engineering, New York, NY). In: Life cycle problems and environmental technology; Proceedings of the Twenty-sixth Annual Technical Meeting, Philadelphia, PA, May 12-14, 1980. Mt. Prospect, IL, Institute of Environmental Sciences, 1980, p. 38-48. 12 refs.

A new reliability test standard, MIL-STD-781D, has been developed in order to establish the basis of a formal integrated test program which starts in the research and development phase and continues through production. Specific requirements for the analysis of reliability data derived during advanced development, reliability growth monitoring, and test-analyze-and-fix during engineering development, reliability qualification tests (pre-production), and reliability acceptance (production) tests are defined. The standard also defines test procedures and plans based on nonexponential and exponential distributions of times-to-failure, test conditions, and environments. V.L.

A81-46486 **Tracking, Growth and Prediction /TGP/ reliability growth - An integrated approach.** V. H. Pellicione (Grumman Aerospace Corp., Bethpage, NY). In: Life cycle problems and environmental technology; Proceedings of the Twenty-sixth Annual Technical Meeting, Philadelphia, PA, May 12-14, 1980.

Mt. Prospect, IL, Institute of Environmental Sciences, 1980, p. 76-81.

The paper describes the Tracking, Growth, and Prediction (TGP) system, a growth management concept for establishing quantitative reliability growth guidelines and tracking subsequent growth performance through various phases of equipment and system development. The TGP system is based on a deterministic model defining the logistics family of growth curves and has been found to be applicable to every program phase in a system's life cycle, flexible enough to incorporate all meaningful program parameters and constraints, dependable on a theoretical as well as empirical basis, and mathematically tractable. Various applications of the TGP system are described, including Test, Analyze, and Fix; field growth monitoring, operational development testing, and reliability acceptance testing (burn-in, failure free, etc.). F.G.M.

A81-46487 **Computer aided design for reliability.** I. R. Jones and G. N. Morrison (Hughes Aircraft Co., Culver City, CA). In: Life cycle problems and environmental technology; Proceedings of the Twenty-sixth Annual Technical Meeting, Philadelphia, PA, May 12-14, 1980. Mt. Prospect, IL, Institute of Environmental Sciences, 1980, p. 82-86.

A new computer-aided design concept called CAD-R (Computer-Aided Design for Reliability) is described; this program allows the designer to quickly obtain a thermally optimized component layout for the circuit boards of an electronic circuit applications throughout the past two decades have almost always used time-invariant weights. The reported study demonstrates potential benefits of time-variations in weighting, through a rudimentary illustrative example. The application used for illustration is a planar intercept problem, in which the control variable is applied missile acceleration in the y-direction. A reformulation of the original formulation with generalized weighting is also discussed. A simple iterative algorithm is devised to synthesize the weighting function, which subsequently provides a solution with a control acceleration reaching a constant magnitude limit over a finite time interval. G.R.

N81-10022# Federal Aviation Administration, Atlantic City, N.J. Technical Center.

ENGINEERING AND DEVELOPMENT PROGRAM PLAN AIRCRAFT CRASHWORTHINESS

C. A. Caiafa and Lawrence M. Neri Jun. 1980 55 p refs (AD-A089431; FAA-CT-80-166; FAA-ED-18-6) Avail: NTIS HC A04/MF A01 CSCL 01/2

The Aircraft Crashworthiness Program Plan is designed to reduce or prevent aircraft occupants from incurring serious or fatal injuries in a survivable crash impact accident by incorporating crashworthy design features into the initial stages of fixed-wing and rotary-wing aircraft development. It describes a 5 year development program for both airplanes and rotorcraft. It identifies five major subprogram areas for study and analysis to accomplish the programs goals: (1) Airframes; (2) Cabin safety; (3) Fuel system protection; (4) Emergency evacuation system; and (5) Standards, criteria, and procedures. The plan emphasizes use of available background data, development of analytical techniques, validation of analytical techniques, validation of data to determine feasibility/acceptability and transmittal of appropriate data for consideration as the basis for regulation, standards, etc. The federal aviation administration groups, other government agencies/departments and industry organizations participating in this effort are identified. Program schedule with milestones is presented. Program management and funding requirements are also identified. GRA

N81-10213# Virginia Highway Research Council, Charlottesville. **VARIATIONS IN SKID RESISTANCE OVER TIME, PART 1 Final Report**

Stephen N. Runkle and David C. Mahone Feb. 1980 58 p Sponsored in part by Virginia Dept. of Highways and Transportation, Richmond (PB80-198807; FHWA/VA-80/33; VHTRC-80-R33) Avail: NTIS HC A04/MF A01 CSCL 13B

The Virginia Department of Highways and Transportation survey skid trailer, the Department's research trailer, the research stopping distance car, and the grease patch method of measuring surface texture were evaluated with respect to time and weather dependent changes in measured values. The grease patch method of measuring texture seems to have the same basic relationship to weather variables as does the Department's survey trailer, but the relationship is consistent among sites. Also, the use of this method is time consuming and expensive. The research trailer

experienced so many breakdowns that the researchers place little confidence in the results obtained with this testing device. For the stopping distance car it was found that the average standard deviation for all test speeds on the six sites tested was 3.26 skid numbers. GRA

N81-10771 University of South Florida, Tampa.
NON PARAMETRIC QUASI-BAYESIAN ESTIMATION OF RELIABILITY AND PRIOR DISTRIBUTION Ph.D. Thesis
 Cheng-Ming Weng 1980 83 p
 Avail: Univ. Microfilms Order No. 8022936

Failure models which depend on stochastic parameters whose distribution $G(\theta)$ is unknown are examined from a nonparametric point of view and in a Bayesian setting. The problem of estimating G when a priori information about G is specified in the form of an initial guess $G(\theta)$ is considered. Assuming that the unconditional failure time distribution is a Dirichlet process, estimators of the prior G and reliability function are obtained based on censored data. Also, assuming that the unconditional failure time distribution is a mixture of Dirichlet process, Bayesian estimators are obtained for reliability and the prior distribution Monte Carlo simulation is employed to compare the estimators for some specific failure models. Dissert. Abstr.

N81-10896# International Energy Associates Ltd., Washington, D.C.

APPLICATION OF SPACE AND AVIATION TECHNOLOGY TO IMPROVE THE SAFETY AND RELIABILITY OF NUCLEAR POWER PLANT OPERATIONS Final Report

Apr. 1980 271 p refs

(W-31-109-eng-38)

(DOE/TIC-11143) Avail: NTIS HC A12/MF A01

Various technologies that have been developed and utilized by the aerospace community are examined, particularly the National Aeronautics and Space Administration (NASA) and the aviation industry. Potential for contributing to improved operational safety and reliability at commercial nuclear power plants of the type being built and operated in the United States today is emphasized. Transfer and application of technology developed by NASA, as well as other public and private institutions, may well help to decrease the likelihood of reactor accidents in the future. DOE

N81-10944# Air Force Geophysics Lab., Hanscom AFB, Mass.
SPECIAL CONSIDERATIONS TO ASSURE FLIGHT SUCCESS WITH LARGE, EXPENSIVE ROCKET PAYLOADS

C. D. Howard and R. O. Rasmussen (Space Vector Corp., Northridge, Calif.) / In ESA European Rocket and Balloon Programs and Related Res. Jun. 1980 p 199-201 ref

Avail: NTIS HC A22/MF A01

The typical sounding rocket philosophy of high risk, low cost, and rapid response is being modified by the advent of more expensive, complex, and larger ARIES payloads now being used to support high priority Department of Defense programs. Payload problem areas are identified and some solutions to increase probability of flight success are identified. Increased costs and more time on planning, engineering, and testing are indicated.

Author (ESA)

N81-11021# RANN, Inc., Palo Alto, Calif.

EXPLORATORY STUDY OF HAZARD MITIGATION AND RESEARCH IN THE AIR TRANSPORT SYSTEM Final Report

R. L. Bisplinghoff, P. G. Dembling, A. J. Eggers, Jr., C. W. Harper, and J. D. Young 31 Mar. 1980 99 p refs

(AD-A089204; EMW-00432) Avail: NTIS HC A05/MF A01 CSCL 13/12

The study examines a series of principles that may effectively mitigate technological hazards within the Air Transport System. These principles are: precise design criteria and verification of the standards which relate to an airplane's operating environment; quality control in manufacturing with high levels of performance in design, construction, inspection, and maintenance of the system; periodic testing and evaluation of equipment and human elements to meet performance standards; training and education of key managers and operators in emergency procedures with emphasis in new systems and multi-problem hazards; establish communication modes linking key elements with institutions in the system to mitigate, respond, and recover from emergencies; a system

of reporting incident and accident investigations in a prompt manner to allow for a coordinated recovery; and the system must be regulated, audited, and demonstrated frequently to protect public interest, including proper liability. These principles are then analyzed in three areas in which successful hazard mitigation will reduce the effects of increased technological applications. These topic areas include: design, construction, inspection, and maintenance; system development and operation; and liability and regulation. The study concludes that with the rapid development in high technology and with its subsequent rapid application to our national capability, technological hazards converge onto a wide variety of societies' activities. The report suggests that successful mitigation of technological hazards can be achieved through utilizing the previously outlined principles within the total air transport system environment. GRA

N81-11266# Advisory Group for Aerospace Research and Development, Neuilly-Sur-Seine (France).

FAULT TOLERANCE DESIGN AND REDUNDANCY MANAGEMENT TECHNIQUES

Sep. 1980 175 p refs Lecture Series held in Athens, 13-14 Oct. 1980; Rome, 16-17 Oct. 1980; and London, 20-21 Oct. 1980

(AGARD-LS-109; ISBN-92-835-0274-4)

Avail: NTIS HC A08/MF A01

Basic theory on concepts involved in the application of advanced software, state estimation, and implementation techniques involved in redundancy management are provided. A review covering the necessary background and state of the art involved in the application of such technologies is given.

N81-11267# Honeywell Systems and Research Center, Minneapolis, Minn.

FAULT TOLERANCE DESIGN AND REDUNDANCY MANAGEMENT TECHNIQUES: INTRODUCTION AND OVERVIEW

Thomas B. Cunningham / In AGARD Fault Tolerance Design and Redundancy Management Tech. Sep. 1980 2 p

Avail: NTIS HC A08/MF A01

A brief discussion is given of the motivation for fault tolerance through failure management. The technical scope of the lecture series is also bounded. E.D.K.

N81-11272# Honeywell Systems and Research Center, Minneapolis, Minn.

FAILURE MANAGEMENT TECHNIQUES FOR HIGH SURVIVABILITY

Thomas B. Cunningham / In AGARD Fault Tolerance Design and Redundancy Management Tech. Sep. 1980 25 p refs

Avail: NTIS HC A08/MF A01

Survivability of aircraft can be greatly enhanced by employing a number of considerations and techniques in design and placement of avionics components. The initial sizing and location of surfaces should include the impact of survivability. Avionics hardware sharing offers cost reductions and can provide high performance if reliability and survivability issues are successfully addressed. Observers offer a structure for seeking solutions to survivability problems. Observers for in the loop sensor reconstruction often require stability margin enhancement. Techniques for examining this problem and improving stability exist. These considerations are discussed in detail and are combined with trends in sensor and computer technology to formulate a candidate for a flutter mode control implementation. E.D.K.

N81-11273# Saab-Scania, Linkoping (Sweden). Aerospace Div.

FAILURE MANAGEMENT FOR THE SAAB VIGGEN JA37 AIRCRAFT

Kjell Folkesson / In AGARD Fault Tolerance Design and Redundancy Management Tech. Sep. 1980 21 p ref

Avail: NTIS HC A08/MF A01

The JA-37 Viggen is the first military aircraft in series production and field-service equipped with a digital automatic flight control system. The JA-37 Digital Automatic Flight Control System has high control authority and is a flight safety critical system. It has duplex sensors, a single channel digital computer, and simple secondary servos. The digital computer performs

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control-law calculation and sensor and servo monitoring, as well as extensive self test on ground and during flight. The sensors are monitored by comparison. The servos are monitored by comparing the output from a software model with the servo output. E.D.K.

N81-11697# Colorado Univ. at Boulder. Dept. of Computer Science.

A STRATEGY FOR EFFECTIVE INTEGRATION OF VERIFICATION AND TESTING TECHNIQUES

Leon J. Osterweil Jul. 1980 48 p refs Prepared for publication

(Contract DAAG29-80-C-0094; Grants DAAG29-78-G-0046; NSF MCS-77-02194)
(AD-A089960; CU-CS-181-80; ARO-17124.3-M) Avail: NTIS HC A03/MF A01 CSCL 09/2

This paper presents an approach to integrating four techniques for testing, analysis and verification into one overall strategy for incrementally raising confidence in software in a cost effective way. The paper summarizes the strengths, weaknesses, and operational characteristics of dynamic testing, static analysis, symbolic execution and formal verification. It uses a detailed example as an illustration. Next the integrated strategy is presented. Finally, there is a discussion of how this strategy can be used to raise confidence in software requirements and design specifications as well as in code, thereby making it applicable throughout the entire software life cycle. GRA

N81-11917# United Air Lines, Inc., San Francisco, Calif.

RELIABILITY-CENTERED MAINTENANCE

F. S. Nowlan /In AGARD Design to Cost and Life Cycle Cost Jul. 1980 13 p refs

Avail: NTIS HC A15/MF A01

The use of reliability centered maintenance principles are discussed with respect to aircraft component life cycle costs. The following inherent reliability characteristics are emphasized: failure consequences, judged by the effect of loss of function on safety, mission capability and operational readiness; failure modes which lead to an item's loss of function; exposure to secondary damage that results from certain failure modes; visibility of the failure process and a mechanic's ability to discover potential failures and thereby prevent functional failures; evidence by which the operating crew can realize that a functional failure has occurred; exposure to the consequences of multiple failures; and failure rates. R.C.T.

N81-11921# British Aerospace Aircraft Group, Preston (England).

IMPACT OF MAINTAINABILITY OF LIFE CYCLE COSTS

G. R. Thornber /In AGARD Design to Cost and Life Cycle Cost Jul. 1980 11 p

Avail: NTIS HC A15/MF A01

The interpretation of the definitions of the varied parameters used in assessing maintainability with respect to their significant effect on the quantification of the effect on life cycle cost. One possible interpretation is considered and the results obtained using this are indicated. Methods of assessing maintainability as applied to two international collaborative military aircraft are considered and some of the lessons and problems encountered are addressed. R.C.T.

N81-11956# Department of Energy, Washington, D. C.

ELECTRIC AND HYBRID VEHICLE SELF-CERTIFICATION AND VERIFICATION PROCEDURES: MARKET DEMONSTRATION PROGRAM

Mar. 1980 17 p Revised

(DOE/CS-0178-Rev-1) Avail: NTIS HC A02/MF A01

The process by which a manufacturer of an electric or hybrid vehicle certifies that his vehicle meets the DOE Performance Standards for Demonstration is described. Such certification is required for any vehicles to be purchased under the Market Demonstration Program. The verification testing process followed by DOE for testing to verify compliance is described. Manufacturer responsibilities are outlined and procedures for recertification of vehicles that have failed verification testing are presented. DOE

N81-12438 Saab-Scania, Linköping (Sweden). Aerospace Div.

ON THE DECISION TO REPLACE A UNIT EARLY OR LATE: A GRAPHICAL SOLUTION

Bo Bergman 1979 7 p refs

(SAAB-FTK-0-79-19) Avail: NTIS HC A02

A graphical procedure for determining whether a unit should be replaced early or late, given that the unit cannot be replaced exactly at the optimum replacement time, is presented. The expected long run cost per time interval is used as the optimality criterion. An expression which considers the replacement cost, the additional cost suffered at failure, and a cumulative distribution function of the time to failure of the unit is minimized. The failure data analysis is based on the total time on test concept. Author (ESA)

N81-12441# McDonnell-Douglas Astronautics Co., Huntington Beach, Calif.

AMARV HIGH RELIABILITY PIECE PART Final Report, Sep. 1976 - 28 May 1980

J. L. Holmgren May 1980 190 p

(Contract F04701-76-C-0100)

(AD-A090577; MDC-G8497; BMO-TR-80-12) Avail: NTIS HC A09/MF A01 CSCL 16/3

This paper provides an evaluation of the cost effectiveness of the implementation of SAMSO-STD-73-2C, with tailoring on the AMaRV program. It also contains historical background on the development of the control documents used for parts management and test. Conclusions drawn from results of the program, lessons learned, and recommendations for future programs are contained in the text. Appendices include parts screening and destructive physical analysis (DPA) summary data. GRA

N81-12736# National Technical Information Service, Springfield, Va.

ANTHROPOMETRY: BASIC STUDIES AND APPLICATIONS. CITATIONS FROM THE NTIS DATA BASE Progress Report, 1976 - Jul. 1980

Edith Kenton Aug. 1980 143 p Supersedes NTIS/PS-79/0935; NTIS/PS-78/0866

(PB80-813645; NTIS/PS-79/0935; NTIS/PS-78/0866) Avail: NTIS HC \$30.00/MF \$30.00 CSCL 06N

Studies on design and anthropometric fit tests of military clothing, protective clothing and equipment; anthropometric and human factors engineering design of aircraft seats and cabins, cockpits, ejection seats, automobile interiors, safety belts and devices, life jackets, flotation devices, and other safety equipment are presented. Studies on simulation models to model the human body in crash research and to model limb or whole body motion as well as are also covered. In addition, references on anthropometric surveys and anthropometric and human factors engineering aspects of workspace configuration and instrument panel design for boots, aircraft and the like are cited. GRA

N81-13045# Committee on Science and Technology (U. S. House).

DESIGN ANALYSIS OF WIDE-BODY AIRCRAFT

Washington GPO 1980 562 p Hearings before the Subcomm. on Invest. and Oversight of the Comm. on Sci. and Technol., 96th Congr., 1st Sess., no. 98, 17-18, 21 Jul., 6, 15 Aug. and 4 Oct. 1980

(GPO-60-652) Avail: Subcommittee on Investigations and Oversight

Technical design details of the DC-10, such as pylons, slats, and cockpit stall indications were examined. The various design philosophies for wide body aircraft and the research and development upon which those philosophies are based were investigated. T.M.

N81-13069# Federal Aviation Administration, Washington, D.C. Airports Service.

AIRPORT CRASH/FIRE/RESCUE CFR SERVICE COST AND BENEFIT ANALYSIS. VOLUME 2: APPENDICES

Jul. 1980 263 p

(AD-A091155; FAA-AS-80-2-Vol-2)

Avail: NTIS HC A12/MF A01 CSCL 13/12

Contents: national CFR equipment inventory; the 221 air carrier accidents with potential CFR benefits selected in pass one; the 129 air carrier accidents that pass two determined to provide no CFR benefits; a list of the 61 air carrier accidents studied in detail in pass three for which NTSB records were available; the 31 air carrier accidents for which detailed NTSB were unavailable; description of the 61 air carrier accidents studied in detail in pass three for which NTSB records were

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available; and estimates of CRF crash benefits for air carrier accident, 1966-1978. GRA

N81-13184# Westinghouse Electric Corp., Pittsburgh, Pa. Advanced Energy Systems Div.
SYSTEM SAFETY REPORT FOR METHANE UTILIZATION FROM COALBEDS FOR POWER GENERATION AT BETH-LEHEM MINES CORPORATION MARIANNA MINE NO. 58, MARIANNA, PENNSYLVANIA

Jul. 1980 57 p
 (Contract DE-AC21-77ET-13133)
 (AESD-TME-3030) Avail: NTIS HC A04/MF A01

Hazards associated with the coalbed gas mixture program are identified and equipment, systems and procedures that would eliminate, control or provide early warning of these potential hazards is specified. Flammable gases are compressed safely every day and there are many installations of turbine generator units running on liquid fuel or natural gas. As the primary potential hazard of this program is in the utilization of a methane air mixture, which in the percentage range of 5 to 15 percent is highly flammable, the major system safety engineering effort is directed towards this mixture's safe control. It can be utilized by not allowing it to approach its limits or flammability until it is in the turbine system and by controlling extraneous sources of ignition. S.F.

N81-13633# National Telecommunications and Information Administration, Washington, D.C.

NONIONIZING ELECTROMAGNETIC RADIATION SAFETY: A PROGRAM OF COORDINATED FEDERAL ACTIVITIES RELATED TO BIOLOGICAL EFFECTS OF NONIONIZING ELECTROMAGNETIC RADIATION (0-300 GHz)

Dec. 1979 90 p
 (PB80-211212; NTIA-SP-80-7) Avail: NTIS
 HC A05/MF A01 CSCL 06R

A program for coordinated Federal activities on nonionizing electromagnetic radiation safety is described. The program seeks to develop a better understanding of biological effects and interactions of NER through identification of several program objectives: determine population exposure (environmental, occupational, consumer and medical); determine energy absorbed; determine biological consequences of exposure; develop instrumentation and exposure systems; conduct assessments of risk and impact; and recommend control measures. GRA

N81-13722# International Atomic Energy Agency, Vienna (Austria).

INTERNATIONAL ATOMIC ENERGY AGENCY BULLETIN, VOLUME 22, NO. 5 AND 6

Oct. 1980 158 p refs
 (ISSN-0020-6067) Avail: NTIS HC A08/MF A01

The assessment of benefits and risks associated with various energy sources and systems is considered in relation to human needs. Particular emphasis is given to occupational hazards connected with coal mining, the handling of natural and liquified petroleum gases, and the use of nuclear energy for electric power generation. A method of energy risk comparison is examined as well as the approach of a regulatory agency to the concept of risk. Reports of international conferences on the management of alpha contaminated waste and on plasma physics and controlled nuclear fusion research are included. A.R.H.

N81-13736# Edgerton, Germeshausen and Grier, Inc., Idaho Falls, Idaho. Waste Management Program.

DEVELOPMENT OF CRITERIA AND STANDARDS FOR MANAGEMENT OF LOW-LEVEL RADIOACTIVE WASTE

A. E. Grey and K. L. Falconer Aug. 1980 37 p
 (Contract DE-AC07-76ID-01570)
 (EGG-WM-5233; PR-W-80-21) Avail: NTIS
 HC A03/MF A01

The nature of low-level radioactive waste and the role government agencies play in regulating its management are discussed in view of criteria and standards development. Subject areas for which criteria and standards could be developed, current and evolving requirements, and future suggested analyses are examined. DOE

N81-13938# Naval Weapons Center, China Lake, Calif.
AN INVESTIGATION OF SAFETY HAZARDS AND RELIABILITY PROBLEMS IN AERIAL REFUELING STORES Final

Report, Mar. - Jul. 1980

Leo D. Budd Aug. 1980 70 p refs
 (AD-A091788; AD-E900014; NWC-TP-6218) Avail: NTIS
 HC A04/MF A01 CSCL 01/2

An investigation was conducted to identify sources of safety hazards and reliability problems in model D-704 aerial refueling stores. A failure modes and effects analysis was performed on the D-704. Mishap data, safety UR (unsatisfactory report) data, and 3-M (maintenance and material management) data were analyzed to identify historical problems. Comparisons of model 31-300 failure statistics to model D-704 failure statistics is included. GRA

N81-14988# National Transportation Safety Board, Washington, D. C. Bureau of Accident Investigation.

COMMUTER AIRLINE SAFETY Special Study, 1970 - 1979

22 Jul. 1980 53 p refs
 (PB81-104267; NTSB-AAS-80-1) Avail: NTIS
 HC A04/MF A01 CSCL 01B

A review of the predominant safety issues which effect the commuter airline industry and a review of the relationship of the Federal regulations to the commuter airlines are presented. The Safety Board developed the basis of the study from its 1972 special study of air taxis, the Board's accident statistics, and accident investigation experience and from an extensive field survey. The operational maintenance, training, and regulatory areas of the industry are discussed and safety deficiencies are analyzed. A number of safety recommendations to the FAA designed to enhance the commuter airline industry are presented. T.M.

N81-15695 Ohio State Univ., Columbus.

AIRCREW COMPLIANCE WITH STANDARD OPERATING PROCEDURES AS A COMPONENT OF AIRLINE SAFETY Ph.D. Thesis

Jeffrey Edward Schofield 1980 179 p
 Avail: Univ. Microfilms Order No. 8100248

The relationships between compliance with a well defined set of explicit procedures and operational safety are discussed. The pervasiveness of standardized operating procedures in the airline environment and examples of their affiliation with accidents are illustrated. The concept of task, procedure, and internal model are drawn together. The data for this analysis were generated by means of a pioneering experiment high fidelity full mission simulation. Fully qualified crew members from a major U.S. airline served as volunteer subjects. Routine procedural activity rather than emergency or rare event behavior is emphasized in the analysis. A finite collection of normal operating procedures is identified using crew publications and the simulation scenario. Various empirical and analytical taxonomies of these procedures are constructed. A taxon of verbal Crew Coordination Procedures is used to objectively evaluate routine procedural compliance. Crew member adherence to procedural imperatives is shown to be nonhomogeneous. Dissert. Abstr.

N81-15852# Los Alamos Scientific Lab., N. Mex.
ENVIRONMENTAL AND SAFETY ENVELOPE ANALYSIS FOR INERTIAL FUSION APPLICATIONS

Joyce Gross Freiwald, John H. Pendergrass, and Thurman G. Frank 1980 8 p refs Presented at 4th ANS Topical Meeting on the Technol. of Controlled Nucl. Fusion, King of Prussia, Pa., 14-17 Oct. 1980 Sponsored by DOE
 (LA-UR-80-2885; CONF-801011-51) Avail: NTIS HC A02/MF A01

An envelope analysis concept and a generic process flow model are described which together can be used to identify and isolate plant functions and provide for detailed mass and energy balance bookkeeping for environmental and safety studies. Two laser fusion power plant concepts are analyzed with this approach. Samples of the detailed tables of material flow rates into and out of an envelope are presented. The tritium and lithium inventories and air activation are identified as having important potential environmental problems and safety risks. M.G.

N81-16023# Air Force Inst. of Tech., Wright-Patterson AFB, Ohio. Dept. of Industrial and Systems Engineering.

AIRCREW COMPLIANCE WITH STANDARD OPERATING PROCEDURES AS A COMPONENT OF AIRLINE SAFETY Ph.D. Thesis - Ohio State Univ.

Jeffrey Edward Schofield 1980 183 p refs
 (AD-A092443; AFIT-CI-80-30D) Avail: NTIS

06 RELIABILITY AND QUALITY CONTROL

HC A09/MF A01 CSCL 01/2

Improving the safety of complex human-machine systems is a continuing challenge. Available information concerning system failures, which are usually called accidents, incidents, or mishaps, regularly points to human operators as the 'brittle elements.' The need for greater understanding of operator behavior is recognized in a variety of technologically sophisticated systems, for example, industrial processes, health care, public utilities and national defense; but nowhere is it more obvious than in the aftermath of a commercial airline accident. Following the November 1979 crash of an Air New Zealand DC-10 which killed 257 people in Antarctica, United Press International noted that the ten worst disasters in aviation history have all occurred since October 1972. Although the degree of operator culpability varies, the fact that the five deadliest accidents have occurred since March 1974 is particularly significant. At least one commercial airliner was completely destroyed and over 200 people were killed in each of the five crashes. Wide-body jetliners, either Boeing 747 or McDonnell Douglas DC-10 aircraft, were involved in each instance. The sheer size of such vehicles portends grave consequences in case of system failure, be it human mechanical or a combination of the two. GRA

N81-16024# Federal Aviation Administration, Washington, D.C. Office of Aviation Safety.

SPECIAL AVIATION FIRE AND EXPLOSION REDUCTION (SAFER) ADVISORY COMMITTEE, VOLUME 1 Final Report, 26 Jun. 1978 - 26 Jun. 1980

J. H. Enders and E. C. Wood 26 Jun. 1980 86 p refs (AD-A092016; FAA-ASF-80-4-Vol-1) Avail: NTIS HC A05/MF A01 CSCL 13/12

The Special Aviation Fire and Explosion Reduction (SAFER) Advisory Committee and its technical supporting groups spent nearly 13 months from May 1979 through June 1980 examining the factors affecting the ability of the aircraft cabin occupant to survive in the post-crash fire environment and the range of solutions available. Having only a limited amount of time available, the Committee confined its examination to large transport category aircraft reasoning that recommendations developed could provide the necessary guidance for the FAA to address the broader spectrum of airplane and rotorcraft fire safety improvement. During the course of this assignment, certain topics that were outside the scope of the Committee, yet have some bearing on aircraft fire in general, were identified but not discussed by the Committee. Some of these topics were felt to be worthy of further examination by the FAA or by some other body of advisors constituted for that purpose. These topics are not addressed in this report. Presentations were made to the SAFER Committee by Committee members, technical supporting groups, the FAA, citizens and private firms. The broadly-constituted body of information developed and presented to the Committee formed the basis for Committee Findings and Recommendations. The Committee focused its recommendations on solutions or interim improvements. GRA

N81-16025# Naval Air Development Center, Warminster, Pa. Aircraft and Crew Systems Technology Directorate.

DESIGN, FABRICATION, AND TESTING OF THE MAXIMUM PERFORMANCE EJECTION SYSTEM (MPES) SEAT STRUCTURE

Thomas J. Zenobi and William C. Ward Nov. 1980 106 p (AD-A092292; NADC-80208-60) Avail: NTIS HC A06/MF A01 CSCL 01/3

Navy has undertaken an effort to utilize an ejection seat structure composed of aluminum honeycomb sandwich composite material. This report documents the design, fabrication procedures and acceptance testing of the seat structure. Due to higher fabrication costs, tradeoffs between strength, weight and cost will have to be addressed. GRA

N81-16070# IIT Research Inst., Chicago, Ill. Guidance and Control Information and Analysis Center.

EVALUATION OF RF ANECHOIC CHAMBER FIRE PROTECTION SYSTEMS Final Report

Thomas E. Waterman, John A. Campbell, Larry D. Paarmann, Irving N. Indel, and Charles W. Smoots Jul. 1980 177 p refs

(Contract DSA900-77-C-3840)

(AD-A092478; AD-E900032; GACIAC-SR-80-02;

NWC-TP-6211) Avail: NTIS HC A09/MF A01 CSCL 14/2

The increasing use of microwave anechoic chambers plus several recent chamber fires was the impetus for this special

study. The report identifies and collects in one document the various issues and problems associated with the fire protection of anechoic chambers. It also addresses the interfaces between personnel groups including the chamber designers, operators, maintenance and the fire department. It is not a design report; i.e., it does not contain enough detail to design either a chamber or the fire protection system. Instead, it presents the pros and cons of the various fire protection options available to the designers (smoke and heat detectors, alarm systems, sprinkler heads, preferred physical locations, fire suppressant agents, etc.) and relates these to the chamber operation. The report also identifies several areas where additional investigation is required such as detection of deep-seated combustion, testing of new more fire-resistant absorber materials, and analysis of the combustion products of halogen-type suppressants. An extensive list of references is included. GRA

N81-16109*# National Aeronautics and Space Administration, Washington, D. C.

REPORT TO THE NASA ADMINISTRATOR BY THE AEROSPACE SAFETY ADVISORY PANEL ON THE SPACE SHUTTLE PROGRAM. PART 1: OBSERVATIONS AND CONCLUSIONS Annual Report

Jun. 1976 100 p refs

(NASA-TM-82251) Avail: NTIS HC A05/MF A01 CSCL 22A

Each system was chosen on the basis of its importance with respect to crew safety and mission success. An overview of the systems management is presented. The space shuttle main engine, orbiter thermal protection system, avionics, external tanks and solid rocket boosters were examined. The ground test and ground support equipment programs were studied. Program management was found to have an adequate understanding of the significant ground and flight risks involved. T.M.

N81-16112*# National Aeronautics and Space Administration, Washington, D. C.

ANNUAL REPORT TO THE NASA ADMINISTRATOR BY THE AEROSPACE SAFETY ADVISORY PANEL ON THE SPACE SHUTTLE PROGRAM. PART 1: OBSERVATIONS AND CONCLUSIONS Annual Report

Mar. 1977 63 p

(NASA-TM-82244) Avail: NTIS HC A04/MF A01 CSCL 22A

The panel reviewed the following areas of major significance for the Approach and Landing Test program: mission planning and crew training, flight-readiness of the Carrier Aircraft and the Orbiter, including its flight control and avionics system, facilities, and communications and ground support equipment. The management system for risk assessment was investigated. The Orbital Flight Test Program was also reviewed. Observations and recommendations are presented. T.M.

N81-16113*# National Aeronautics and Space Administration, Washington, D. C.

ANNUAL REPORT TO THE NASA ADMINISTRATOR BY THE AEROSPACE SAFETY ADVISORY PANEL ON THE SPACE SHUTTLE PROGRAM. PART 2: SUMMARY OF INFORMATION DEVELOPED IN THE PANEL'S FACT-FINDING ACTIVITIES Annual Report

Mar. 1977 232 p refs

(NASA-TM-82245) Avail: NTIS HC A11/MF A01 CSCL 22A

The panel focused its attention on those areas that are considered most significant for flight success and safety. Elements required for the Approach and Landing Test Program, the Orbital Flight Test Program, and those management systems and their implementation which directly affect safety, reliability, and quality control, were investigated. Ground facilities and the training programs for the ground and flight crews were studied. Of special interest was the orbiter thermal protection subsystems. T.M.

N81-16114*# National Aeronautics and Space Administration, Washington, D. C.

ANNUAL REPORT TO THE NASA ADMINISTRATOR BY THE AEROSPACE SAFETY ADVISORY PANEL ON THE SPACE SHUTTLE PROGRAM. PART 2: SUMMARY OF INFORMATION DEVELOPED IN THE PANEL'S FACT-FINDING ACTIVITIES Annual Report

Jun. 1976 312 p refs

(NASA-TM-82252) Avail: NTIS HC A14/MF A01 CSCL 22A

Safety management areas of concern include the space shuttle main engine, shuttle avionics, orbiter thermal protection system, the external tank program, and the solid rocket booster program. The ground test program and ground support equipment system were reviewed. Systems integration and technical 'conscience' were of major priorities for the investigating teams. T.M.

N81-16115* National Aeronautics and Space Administration, Washington, D. C.

ANNUAL REPORT TO THE NASA ADMINISTRATOR BY THE AEROSPACE SAFETY ADVISORY PANEL. PART 2: SPACE SHUTTLE PROGRAM. SECTION 1: OBSERVATIONS AND CONCLUSIONS Annual Report

Jun. 1975 37 p refs

(NASA-TM-82248) Avail: NTIS HC A03/MF A01 CSCL 22A

The NASA and contractor management systems, including policies, practices, and procedures for the development of critical systems, subsystems and integration of the program elements, were investigated. The technical development status of critical systems, subsystems, and interfaces is presented. Space shuttle elements were qualified as to potential risks and hazards. The elements included the orbiter, external tanks, main engine, solid rocket boosters, and the ground support facilities. T.M.

N81-16116* National Aeronautics and Space Administration, Washington, D. C.

ANNUAL REPORT TO THE NASA ADMINISTRATOR BY THE AEROSPACE SAFETY ADVISORY PANEL. PART 2: SPACE SHUTTLE PROGRAM. SECTION 2: SUMMARY OF INFORMATION DEVELOPED IN THE PANEL'S FACT-FINDING ACTIVITIES Annual Report

Jun. 1975 284 p refs

(NASA-TM-82249) Avail: NTIS HC A14/MF A01 CSCL 22A

The management areas and the individual elements of the shuttle system were investigated. The basic management or design approach including the most obvious limits or hazards that are significant to crew safety was reviewed. Shuttle program elements that were studied included the orbiter, the space shuttle main engine, the external tank project, solid rocket boosters, and the launch and landing elements. T.M.

N81-16818* Pittsburgh Univ., Pa. Dept. of Mathematics and Statistics.

ASSESSING RISKS THROUGH THE DETERMINATION OF RARE EVENT PROBABILITIES Interim Report

Allan R. Sampson and Robert L. Smith Jul. 1980 48 p refs (Contract F49620-79-C-0161; AF Proj. 2304)

(AD-A092192; AFOSR-80-1165TR)

Avail: NTIS

HC A03/MF A01 CSCL 12/1

We consider the problem in risk assessment of evaluating the probability of occurrence of rare, but potentially catastrophic, events. The lack of historical data due to the sheer novelty of the event makes conventional statistical approaches inappropriate. The problem is compounded by the complex multivariate dependencies that may exist across potential event sites. In order to evaluate the likelihood of one or more such catastrophic events occurring, we provide an information theoretic model for merging a decision maker's opinion with expert judgment. Also provided is a methodology for the reconciling of conflicting expert judgments. This merging approach is invariant to the decision maker's viewpoint in the limiting case of exceptionally rare events. These methods are applied to case studies in likelihood assessment of Liquid Natural Gas tanker spills and seismic induced light water nuclear reactor meltdowns. GRA

N81-16880* Stanford Linear Accelerator Center, Calif.
A MODULAR SAFETY INTERLOCK SYSTEM FOR HIGH ENERGY PHYSICS EXPERIMENTS

J. Kieffer and B. V. Golceff Oct. 1980 4 p refs Presented at 1980 Nucl. Sci. and Nucl. Power Systems Symp., Orlando, Fla., 5-7 Nov. 1980

(Contract DE-AC03-76SF-00515)

(SLAC-PUB-2627) Avail: NTIS HC A02/MF A01

A frequent problem in electronics systems for high energy physics experiments is to provide protection for personnel and equipment. Interlock systems are typically designed as an afterthought and as a result, the working environment around

complex experiments with many independent high voltages or hazardous gas subsystems, and modular hardware were designed make possible a standardized, integrated, hierarchical system's approach and which can be easily tailored to custom requirements. T.M.

N81-16974* National Aeronautics and Space Administration, Washington, D. C.

ANNUAL REPORT BY AEROSPACE SAFETY ADVISORY PANEL Annual Report

1980 57 p refs

(NASA-TM-82250) Avail: NTIS HC A04/MF A01 CSCL 05A

Elements of the shuttle program that directly affect the mission success and crew safety were investigated. These elements included the shuttle orbiter, the main engine, the solid rocket boosters, avionics system, ground support equipment and the approach and landing operations. The thermal protection systems were studied in detail. Crew training and ground simulation test procedures were reviewed. T.M.

N81-17008* Institute of Aviation Medicine, Farnborough (England).

SURVIVAL AFTER EJECTION, 1968 - 1979

D. J. Anton In AGARD Aircrew Safety and Survivability (Ltd. to Combat Aircraft) Oct. 1980 4 p

Avail: NTIS HC A08/MF A01

Several problems encountered in post ejection situations were examined. Particular attention was placed on identifying deficiencies in equipment and drills and determining the difference between pilot preference and laboratory theory as well as their effect on overall survivability. R.C.T.

N81-17145* National Aeronautics and Space Administration, Washington, D. C.

THE 1980 JANNAF PROPULSION SYSTEMS HAZARDS SUBCOMMITTEE MEETING, VOL. 1

John A. E. Hannum, ed. Dec. 1980 377 p refs Conf. held at Naval Postgraduate School, Monterey, Calif., 29-31 Oct. 1980; Sponsored by Joint Army-Navy-NASA-Air Force (JANNAF) Prepared in cooperation with APL, Laurel, Md.

(Contract N00024-78-C-5384)

(CPIA-Pub-330-Vol-1; NASA-TM-82255) Avail: Chemical Propulsion Information Agency, Laurel, Md. CSCL 21H

A variety of hazards evaluation and hazards technology areas associated with propulsion systems are addressed. Space propulsion systems hazards, gun propulsion hazards, deflagration to detonation transition; shock to detonation transition, projectile impact hazards, propellant properties for dynamic interaction, and sympathetic reactions are discussed.

N81-17146* National Aeronautics and Space Administration, Washington, D. C.

SAFETY POLICY AND REQUIREMENTS FOR PAYLOADS USING THE SPACE TRANSPORTATION SYSTEM

P. D. Davis In its The 1980 JANNAF Propulsion Systems Hazards Subcomm. Meeting, Vol. 1 Dec. 1980 p 1-6

Avail: Chemical Propulsion Information Agency, Laurel, Md. CSCL 22A

New safety requirements for payloads using the Space Transportation System are presented. Responsibility for assuring payload safety is placed on the payload organization. L.F.M.

N81-17147* Jet Propulsion Lab., California Inst. of Tech., Pasadena.

FLUORINE/HYDRAZINE PROPULSION SYSTEM SAFETY CONSIDERATIONS FOR STS OPERATIONS

D. L. Bond, G. W. Kruger, and L. C. Montgomery In NASA, Washington The 1980 JANNAF Propulsion Systems Hazards Subcomm. Meeting, Vol. 1 Dec. 1980 p 7-19 refs

(Contract NAS7-100)

Avail: Chemical Propulsion Information Agency, Laurel, Md. CSCL 21H

The design and safety constraints for a passive fluorine/hydrazine propulsion payload for the Space Transportation System Orbiter are summarized and the details of the safety and technical reviews completed for a prototype system are discussed.

06 RELIABILITY AND QUALITY CONTROL

Considerations include thermal, materials, containment, fire, explosion, leakage, venting, ground support, abort return to Earth, reliability and all phases of test and operations. Author

N81-17148* TRW Defense and Space Systems Group, Redondo Beach, Calif.

SAFETY OF LIQUID PROPULSION SYSTEMS FOR STS PAYLOADS

J. C. Lewis and R. G. Gilroy /in NASA, Washington The 1980 JANNAF Propulsion Systems Hazards Subcomm. Meeting, Vol. 1 Dec. 1980 p 21-35 refs

Avail: Chemical Propulsion Information Agency, Laurel, Md. CSCL 21H

STS payload safety requirements for Earth-storable liquid propulsion systems are reviewed with respect to applicable safety documents. The effect of normal flight and emergency landing/abort launch profiles on propulsion system design is delineated. Spacecraft studied include Earth satellites, interplanetary spacecraft, and orbit transfer vehicles. Safety considerations for monopropellant (hydrazine), bipropellant (nitrogen tetroxide/monomethyl hydrazine), and ion (mercury) propulsion systems are described. Safety requirements for specific components of propulsion systems are reported. Analysis techniques for STS payload fracture control requirements for pressure vessels and critical support structure are discussed. Author

N81-17149* Air Force Space Div., Los Angeles, Calif.

LIQUID AND SOLID PROPULSION SYSTEM SAFETY DESIGN CRITERIA FOR SPACE TRANSPORTATION SYSTEM PAYLOADS

James S. Smith /in NASA, Washington The 1980 JANNAF Propulsion Systems Hazards Subcomm. Meeting, Vol. 1 Dec. 1980 p 37-41

Avail: Chemical Propulsion Information Agency, Laurel, Md. CSCL 21H

Design safety criteria for Space Transportation System propulsion system payloads are discussed. Terms such as inhibit, monitoring, safing, safe distance, safe and arm device, and flow control device are defined and their use in design of safety requirements described. L.F.M.

N81-17150* Rockwell International Corp., Downey, Calif. Space Operations and Satellite Systems Div.

MULTIMISSION MODULAR SPACECRAFT IN-ORBIT REFUELING STUDY

F. G. Etheridge /in NASA, Washington The 1980 JANNAF Propulsion Systems Hazards Subcomm. Meeting, Vol. 1 Dec. 1980 p 43-57 refs

(Contract NAS5-26152)
CSCL 22A

The approaching operational status of the Space Transportation System (STS) means that on-orbit servicing/refurbishment of orbiting spacecraft will be possible. The issues are discussed and the options related to refueling the Multimission Modular Spacecraft (MMS) in the Shuttle cargo bay are identified. The larger MMS spacecraft, Mark 2, requires the transfer of 5000 pounds of hydrazine. Resupply tankage configuration, location in the Shuttle, propellant transfer methods, fluid coupling equipment, and safety-related items also are discussed. The equipment required to define an on-orbit system capable of refueling the MMS is identified. Author

N81-17151* Naval Weapons Center, China Lake, Calif.

JANNAF WORKSHOP ON HAZARDS DUE TO PRE-COMBUSTION BEHAVIOR OF HIGH ENERGY PROPELLANTS

T. L. Boggs /in NASA, Washington The 1980 JANNAF Propulsion Systems Hazards Subcomm. Meeting, Vol. 1 Dec. 1980 p 85-103 Conf. held at Eglin Air Force Base, 15-16 Apr. 1980

Avail: Chemical Propulsion Information Agency, Laurel, Md. CSCL-21B

Experimental results and hazards associated with the pre-combustion behavior of high energy propellants are discussed. Special attention was given to future needs for modeling and the problem of deflagration to detonation transition. L.F.M.

N81-17184* Southwest Research Inst., San Antonio, Tex. **PREDICTION OF INITIATION OF LOW AND HIGH EXPLOSIVE FILLERS DUE TO FRAGMENT OR PROJECTILE IMPACT**

P. H. Zabel and V. B. Parr /in NASA, Washington The 1980 JANNAF Propulsion Systems Hazards Subcomm. Meeting, Vol. 1 Dec. 1980 p 321-333 refs Sponsored by AFSC

Avail: Chemical Propulsion Information Agency, Laurel, Md. CSCL 21B

A methodology is presented which provides predictions for the probability of initiation of explosion in high explosive filled warheads and in propellant filled rocket motor cases given the impact of compact fragments or of small projectiles. Equations of velocities at which 50 percent of the explosive filled cases will initiate either high or low order are developed for compact fragments, and for projectiles. These data are used to establish the standard deviation of the data from the 50 percent initiation line. Standard deviation is used to provide predictions of the probability of initiation given the impact velocity and other pertinent parameters using equations and logic which are established in a computer model. This computer model uses fragment material properties and encounter parameters to predict fragment impact initiation, and projectile and casing material properties and encounter parameters to predict projectile impact initiation. S.F.

N81-17375# Centre National d'Etudes Spatiales, Toulouse (France).

RULES FOR EVALUATION, SCREENING, AND QUALIFICATION OF HYBRID CIRCUITS [REGLES D'EVALUATION, DE DEVERMINAGE ET DE QUALIFICATION DES CIRCUITS HYBRIDES]

M. Billot 9 May 1979 24 p In FRENCH; ENGLISH summary

(CNES-CT/PRT/QPE/FT/103) Avail: NTIS HC A02/MF A01

Hybrid circuit design, fabrication, and checkout criteria are listed. The evaluation philosophy governing the SPOT project and the acceptability of hybrid microcircuit manufacturing practices is explained. The inspection and procurement rules for added-on microcomponents as well as the screening and lot qualification rules for hybrid microcircuits are given. These criteria are applicable to every type of hybrid circuit (thick or thin film). Author (ESA)

N81-17596# Mueller Associates, Inc., Baltimore, Md.

PROGRAM PLAN FOR RELIABILITY AND MAINTAINABILITY IN ACTIVE SOLAR HEATING AND COOLING SYSTEMS

Oct. 1980 62 p refs
(Contract DE-AC01-80CS-36010)

(DOE/CS-36010/01) Avail: NTIS HC A04/MF A01

Specific objectives are as follows: provide all groups that have solar R & M concerns with the information that is available to the program and that can assist in alleviating those concerns; assist the solar energy industry in improving levels of R & M performance in state of the art solar energy systems, components, and materials; assist in the early development of a viable infrastructure for the design, manufacture, installation, and maintenance of reliable, maintainable, and durable solar energy systems; assist in the development of appropriate standards, code provisions, and certification programs relating to the R & M performance of solar energy systems, components, and materials; and develop the information required to support the other activities within the R & M program. These objectives correspond to five areas of action: regulations, research and development, technology transfer, solar industry infrastructure development, and data collection and analysis. T.M.

N81-18656*# Life Systems, Inc., Cleveland, Ohio.

FAULT DIAGNOSTIC INSTRUMENTATION DESIGN FOR ENVIRONMENTAL CONTROL AND LIFE SUPPORT SYSTEMS Final Report

P. Y. Yang, K. C. You, R. A. Wynveen, and J. D. Powell, Jr. Oct. 1979 63 p refs

(Contract NAS2-10050)

(NASA-CR-152309; LSI-TR-361-5)

Avail: NTIS

HC A04/MF A01 CSCL 06K

As a development phase moves toward flight hardware, the system availability becomes an important design aspect which

requires high reliability and maintainability. As part of continuous development efforts, a program to evaluate, design, and demonstrate advanced instrumentation fault diagnostics was successfully completed. Fault tolerance designs for reliability and other instrumentation capabilities to increase maintainability were evaluated and studied. T.M.

N81-19081# RANN, Inc., Palo Alto, Calif.
EXPLORATORY STUDY OF THE ORGANIZATION AND MANAGEMENT OF HAZARD MITIGATION IN THE CIVIL AIR TRANSPORT SYSTEM

C. W. Harper, B. A. Smith, J. D. Young, R. L. Bisplinghoff, P. G. Dembling, and A. J. Eggers, Jr. 26 Jan. 1981 71 p refs Sponsored by Federal Emergency Management Agency (AD-A095081) Avail: NTIS HC A04/MF A01 CSCL 05/1

This exploratory study suggests that organization and management principles and procedures for hazard mitigation derived from the long experience with this objective in the air civil transport system may prove of great value in the development of hazard mitigation activities associated with other major technological systems of national concern. Cited in the report are examples where difficulties may have already arisen from non-observance of some of these principles and where difficulties may arise in future endeavors if these principles are not observed. GRA

N81-19227 Washington Univ., St. Louis, Mo.
PREDICTION AND MEASUREMENT OF THE DURABILITY AND RELIABILITY OF ELASTOMERIC BIOMATERIALS
 Ph.D. Thesis

Kishor Purushottam Gadkaree 1980 144 p
 Avail: Univ. Microfilms Order No. 8103708

Fatigue failure is assumed to initiate from an equivalent sharp edge crack. The edge crack size is obtained from the relationships between breaking strength and edge crack size, which is experimentally determined. Thus, knowing breaking strength distribution, crack size distribution is obtained. Tearing energy correlates crack growth data very well. The crack growth experiments were done at 0.01, 0.1 and 1 cps. From these experiments crack growth law constants were obtained. Utilizing these constants, and crack size distribution, distribution of crack sizes after n fatigue cycles is found. From this the lifetime distribution of specimens is found. Experimental results showed very good agreement with the theoretically predicted distribution function. Experiments were carried out at 1555 psi, 900 psi, 750 psi and 606 psi. It was found that at 606 psi the specimen was not stretched above fatigue limit and so did not fail. Extension of this method to rigid polymers and metals is also explained. Dissert. Abstr.

N81-19320# IIT Research Inst., Chicago, Ill.
DEVELOPMENT OF A HAZARD CLASSIFICATION PROCEDURE FOR INPROCESS PROPELLANT AND EXPLOSIVE MATERIALS Final Report

Hyla S. Napadenaky, Ronald Pape, Richard Rindner, and Daniel Sathriane Dover, Del. ARRADCOM Nov. 1980 276 p refs (Contract DAAK10-78-C-0029) (AD-A094741; AD-E400613; IITRI-J6432; ARLCD-SP-80004) Avail: NTIS HC A12/MF A01 CSCL 19/1

The DOD Explosives Safety Board files, hazards analyses, and existing test methods were reviewed. These were used as the basis for developing a preliminary structure for the hazards classification procedure. The most promising test for incorporation into the procedure was experimental evaluations. Evaluations were completed for local impact, rubbing friction, local thermal, regional thermal, electrostatic discharge, critical diameter, critical layer thickness, tube transition, layer transition, mass explosion, mass fire and firespread tests. The results of these tests served as the basis of the final hazards classification procedure. GRA

N81-19469 Virginia Polytechnic Inst. and State Univ., Blacksburg.
OPTIMAL RELIABILITY DESIGN FOR COMPLEX SYSTEMS
 Ph.D. Thesis

Jae Yearn Kim 1980 87 p
 Avail: Univ. Microfilms Order No. 8101887

The problem of maximizing system reliability subject to resource constraints is addressed in the framework of determining the optimum number of components and the optimum component reliabilities so as to maximize system reliability. The resulting problem, called the integrated reliability optimization problem,

may be classified as corresponding to a mixed integer nonlinear mathematical programming problem. The integrated reliability optimization problem, as mathematically formulated, is transformed into a model that is more amenable to existing solution techniques. It is shown that the solution of the transformed problem is equivalent to the solution of the original problem. Two integrated reliability optimization models are transformed and solved using Powell's optimization algorithm. Numerical results indicated that the solution of the integrated reliability optimization problem may be accomplished quite effectively with this solution algorithm. Dissert. Abstr.

N81-19470# Rockwell International Corp., Thousand Oaks, Calif.
PROCEEDINGS OF THE DARPA/AFML REVIEW OF PROGRESS IN QUANTITATIVE NONDESTRUCTIVE EVALUATION Annual Report, 1 Jul. 1978 - 30 Sep. 1979
 Donald O. Thompson and R. Bruce Thompson Wright-Patterson AFB, Ohio AFWAL Jul. 1980 752 p refs Proceedings held at La Jolla, Calif., 8-13 Jul. 1979 (Contract F33615-74-C-5180; AF Proj. 7351) (AD-A094826; SC595.70AR; AFWAL-TR-80-4078; AR-5) Avail: NTIS HC A99/MF A01 CSCL 11/2

The edited transcripts of the DARPA/AF Review of Progress in Quantitative Nondestructive Evaluation (NDE) held on July 8-13, 1979, at Scripps Institution of Oceanography, La Jolla, California, are presented in this document. Several key topics form the core of these presentations and discussions. They include quantitative ultrasonics, eddy currents, emissions related to failure prediction, and reliability of metals and ceramics. It is believed that this document provides a reasonable summary of NDE research and development currently underway. GRA

N81-19474# California Univ., Berkeley. Operations Research Center.

AVAILABILITY OF SERIES SYSTEMS WITH COMPONENTS SUBJECT TO VARIOUS SHUT-OFF RULES

Zohel S. Khalil (Concordia Univ., Montreal, Canada) Jun. 1980 21 p refs Sponsored in Part by Natural Sciences and Engineering Research Council, Canada

(Grant AF-AFOSR-3179-77; AF Proj. 2304) (AD-A095140; ORC-80-12) Avail: NTIS HC A02/MF A01 CSCL 12/1

In this report we consider different shut-off rules for series systems performance. We calculate limiting system availability under various shut-off rules. In particular, availability results for 2 and 3 unit systems with all failure and repair distributions exponential extended to systems of arbitrary size. Consider a series of system of n components. System failure in such systems coincides with component failure. However, in many systems components can still be functioning after system failure occurs, or some components on failure will shut off others. This means that some shut-off rules can be established for system performance, such as failure of first component shuts off the second and next components or failure of second component shuts off third and higher components but not the first and so on. For example, in a 3 unit system, unit 1 on failure shuts off both unit 2 and 3, unit 2 on failure shuts off only unit 3, but not 1, and units 1 and 2 are not affected when failure of unit 3 occurs. GRA

N81-19858# Virginia Polytechnic Inst. and State Univ., Blacksburg.

SEQUENTIAL TESTS UNDER WEIBULL DISTRIBUTION

P. M. Ghare Dec. 1980 23 p refs Presented at the Reliability and Maintainability Symp., Philadelphia, Jan. 1981 (Grant DAAG29-78-G-0172)

(AD-A095058; RR-Q-7; ARO-15194.8-M) Avail: NTIS HC A02/MF A01 CSCL 12/1

The objective of this paper is to develop acceptance procedures based on a sequential probability ratio test when the system failures follow Weibull probability distribution. The acceptance procedures in both Military Handbook 108 and Mil-Std-781C are based on exponential distribution of failures. Exponential distribution implies a constant hazard rate. The Weibull distribution is much more comprehensive and, with suitable choice of parameters, can describe constant, increasing or decreasing hazard rates. GRA

N81-19859# California Univ., Berkeley. Operations Research Center.

ON THE CONSECUTIVE K-OF-N SYSTEM

Cyrus Derman (Columbia Univ., N.Y.), Gerald J. Lieberman

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(Stanford Univ., Calif.), and Sheldon M. Ross Nov. 1980 26 p refs
(Contracts N00014-75-C-0620; N00014-75-C-0561; N00014-77-C-0299; Grants AF-AFOSR-3213-77; NSF MCS-78-25-146; AF Proj. 2304)
(AD-A095139; ORC-80-25) Avail: NTIS HC A03/MF A01 CSCL 12/1

The consecutive k-of-n system in which there are n components linearly ordered is considered. Each component either functions or fails and the system is said to be failed if any k consecutive components are failed. Let $r(p) = r(p(1), \dots, p(n))$ denote the probability that the system does not fail given that the components are independent, component i functions with probability $p(i)$, $i = 1, \dots, n$. The function $r(p)$ is called the reliability function. The above system is studied both when the components are linearly ordered and also when they are arranged in a circular order. The case where all $p(i)$ are identical and present a recursion for obtaining the reliability of a consecutive k-of-n in terms of the reliability of a consecutive k - 1 of n system is considered. This yields simple explicit formulas when k is small and differs from a recursion. How upper and lower bounds on $r(p)$ can be simply obtained is shown. A dynamic version in which each component independently functions for random time having distribution F is considered. It is shown that when F is increasing failure rate (IFR), then system lifetime is also IFR only in the circular case when $k = 2$. A sequential optimization model in the linear $k = 2$ case is considered. In this model, components are put in place one at a time with complete knowledge as to whether the previous component has worked or not. GRA

N81-20063* ECON, Inc., San Jose, Calif.
STUDY OF MATERIALS PERFORMANCE MODEL FOR AIRCRAFT INTERIORS Final Report
K. Leary and J. Skratt 31 Aug. 1980 86 p
(Contract NAS2-10515)
(NASA-CR-152378) Avail: NTIS HC A05/MF A01 CSCL 01C

A demonstration version of an aircraft interior materials computer data library was developed and contains information on selected materials applicable to aircraft seats and wall panels, including materials for the following: panel face sheets, bond plies, honeycomb, foam, decorative film systems, seat cushions, adhesives, cushion reinforcements, fire blocking layers, slipcovers, decorative fabrics and thermoplastic parts. The information obtained for each material pertains to the material's performance in a fire scenario, selected material properties and several measures of processability. T.M.

N81-20069 General Accounting Office, Washington, D. C.
THE F/A-18 NAVAL STRIKE FIGHTER: PROGRESS HAS BEEN MADE BUT PROBLEMS AND CONCERNS CONTINUE
18 Feb. 1981 41 p
(AD-A095287; GAO/MASAD-81-3) Avail: NTIS HC A03/MF A01 CSCL 01/3

Contents: Technical problems still exist but progress has been made; F/A-18 reliability and maintainability continue to improve despite problem areas, and F/A-18 program costs are steadily increasing. GRA

N81-20189* Office of Science and Technology, Washington, D. C.
CARBON/GRAPHITE COMPOSITE MATERIAL STUDY Annual Report, 1980
Jan. 1981 122 p refs Sponsored in part by NASA, Office of Science and Technology Policy, DOT, DOE, Dept. of Commerce, EPA, Dept. of Health and Human Services, Dept. of Labor, Federal Emergency Management Agency, Dept. of State, DOD and Office of Management and Budget
(NASA-CR-164084; AR-3) Avail: NTIS HC A06/MF A01 CSCL 11D

The potential problems arising from the projected increased use of carbon fiber composite materials in civilian applications are addressed. The primary concern was the electrical hazard associated with carbon fibers released from burning of carbon fiber composites and disposal of carbon composite waste or worn out parts. Final reports of the NASA, DOT, DOE, DOD, and DOC and progress reports of the EPA, DHHS (NIOSH), DOL (OSHA), and the FEMA are presented. Also included are

the findings of the Office of Science and Technology Policy, the status of agency responsibilities, and a list of applicable references. L.F.M.

N81-20445 Columbia Univ., New York.
ON THE OPTIMAL MAINTENANCE OF RELIABILITY SYSTEMS Ph.D. Thesis
Michael Nikolay Katehakis 1980 105 p
Avail: Univ. Microfilms Order No. 8104941

The problem of determining policies for assignment of the repairmen to failed components, which are optimal with respect to either or both the average expected operation time or the expected total discounted operation time of the system criteria, is investigated. The series system which is maintained by a single repairman and whose components have exponential failure and repair distributions, is considered. The two component series system, maintained by a single repairman is studied under the assumption of exponential failure times, when the repair of each component requires the completion of several independent, identifiable repair stages, each of exponential duration. The structure of any policy which maximizes the average expected operation time of the system is determined. Dissert. Abstr.

N81-20449# Edgerton, Germeshausen and Grier, Inc., Idaho Falls, Idaho.

INTEGRATING RELIABILITY ANALYSIS AND DESIGN

D. M. Rasmuson Oct. 1980 68 p ref
(Contract DE-AC07-76ID-01570)

(ALO-131; EGG-IS-5187) Avail: NTIS HC A04/MF A01

The Interactive Reliability Analysis Project is described and the advantages of using computer-aided design systems (CADS) in reliability analysis are enumerated. Common cause failure problems require presentations of systems, analysis of fault trees, and evaluation of solutions to these. Results have to be communicated between the reliability analyst and the system designer. Using a computer-aided design system saves time and money in the analysis of design. Computer-aided design systems lend themselves to cable routing, valve and switch lists, pipe routing, and other component studies. DOE

N81-21924# Edgerton, Germeshausen and Grier, Inc., Idaho Falls, Idaho.

FUSION SAFETY PROGRAM PLAN

J. G. Crocker, Douglas F. Holland, J. Stephen Herring, Sydney Cohen, Steven E. Jones, Glen R. Longhurst, James N. McBride, Brad J. Merrill, Paul A. Roth, Richard E. Schmunk et al Sep. 1980 203 p refs
(Contract DE-AC07-76ID-01570)

(EGG-FSP-5238) Avail: NTIS HC A10/MF A01

The program plan is described which consists of research divided into 13 different areas. These areas focus on the radioactive inventories that are expected in fusion reactors, the energy sources potentially available to release a portion of these inventories, and analysis and design techniques to assess and ensure that the safety risks associated with operation of magnetic fusion facilities are acceptably low. Both long-term program requirements that must be fulfilled as part of the commercialization of fusion power and a five year plan for each of the 13 different program areas are presented. Also presented is a general discussion of magnetic fusion reactor safety, a method for establishing priorities in the program, and specific priority ratings for each task in the five year plan. DOE

N81-22378# Arinc Research Corp., Annapolis, Md.
RELIABILITY, AVAILABILITY AND MAINTAINABILITY DESIGN PRACTICES GUIDE, VOLUME 1

Robert Hecht Mar. 1981 218 p refs Revised 2 Vol.

(Contract DAAK80-80-C-0781)

(AD-A096896; Rept-1773-01-1-2392-Vol-1) Avail: NTIS HC A10/MF A01 CSCL 05/2

This guide compiles, in one source, selected real-world practices (techniques or tools) available to the Army engineer and manager to improve the reliability, availability, and maintainability (RAM) characteristics of equipment. It is the purpose of this guide to provide a medium for the exchange of experience and knowledge of DARCOM engineers, to minimize re-inventing the wheel, and to provide a single compendium of techniques currently in use and available for adaptation to other systems and equipment. These techniques vary greatly in application, source, and theory. GRA

N81-22379# Arinc Research Corp., Annapolis, Md.
RELIABILITY, AVAILABILITY AND MAINTAINABILITY DESIGN PRACTICES GUIDE, VOLUME 2
 Robert Hecht Mar. 1981 170 p Revised 2 Vol.
 (Contract DAAK80-80-C-0781)
 (AD-A096897; Rept-1773-01-1-2392-Vol-2) Avail: NTIS HC A08/MF A01 CSCL 05/2

This guide compiles, in one source, selected real-world practices (techniques or tools) available to the Army engineer and manager to improve the reliability, availability, and maintainability characteristics of equipment. It is the purpose of this guide to provide a medium for the exchange of experience and knowledge of DARCOM engineers, to minimize 're-inventing the wheel,' and to provide a single compendium of techniques currently in use and available for adaptation to other systems and equipment. These techniques vary greatly in application, source, and theory.
 GRA

N81-22431# California Univ., Livermore. Lawrence Livermore Lab.

USING SUBJECTIVE PERCENTILES AND TEST DATA FOR ESTIMATING FRAGILITY FUNCTIONS

L. L. George and R. W. Mensing 15 Jan. 1981 26 p refs
 Presented at DOE Statistical Symp., Berkeley, Calif., 29 Oct. 1980

(Contract W-7405-eng-48)
 (UCRL-84157; CONF-801045-7) Avail: NTIS HC A03/MF A01

Fragility functions are cumulative distribution functions (cdfs) of strength at failure. They are needed for reliability analyses of systems such as power generation and transmission systems. The following are derived least squares parameter estimators for normal and lognormal cdfs, based on subjective percentiles (the method is applicable to any invertible cdf); a composite fragility function for combining several failure modes; estimators of variation within and between groups of experts for nonidentically distributed subjective percentiles; weighted least squares estimators when subjective percentiles have higher variation at higher percents; and weighted least squares and Bayes parameter estimators based on combining subjective percentile and test data.
 DOE

N81-22437# Lockheed-California Co., Burbank.

AIRCRAFT CRASH DYNAMICS: SOME MAJOR CONSIDERATIONS

In The Shock and Vibration Inform. Center The Shock and Vibration Digest, Vol. 13, No. 3 Mar. 1981 p 3-6 refs

Avail: SVIC, Code 5804, Naval Research Lab., Washington, D. C. \$15.00/set CSCL 01/9

The considerations are aircraft crash environments, available analytical methods, and occupant protection. The aircraft crash environment varies depending on aircraft size, configuration, and usage. Current crash design requirements for military and civil helicopters, small airplanes, and large airplanes are presented. Analytical modeling of crash behavior requires three levels of capability: simple, intermediate, and detailed. Brief descriptions of methods and reference simulations are provided. Occupant protection, which is the goal of the crash design effort, is related to a design in which the load capability of the various systems is compatible with the crash environment.
 T.M.

N81-22601# Meyer (A. F.) and Associates, Inc., McLean, Va.
SAFETY ANALYSIS AND REVIEW SYSTEM FOR THE DEPARTMENT OF ENERGY'S FOSSIL ENERGY PROGRAMS, PHASE 1 Quarterly Report

Ellen T. Browne Dec. 1980 14 p
 (Contract DE-AM01-80ET-13650)
 (DOE/ET-13650/1) Avail: NTIS HC A02/MF A01

Work performed to date by A.F. Meyer and Associates, Inc. (AFMA) in support of SARS implementation is summarized. Under the contract, AFMA is providing technical assistance to DOE to analyze SARS data and develop recommended milestones for the Headquarters review requirements, analyze and recommend alternative procedures for conduct of such reviews and develop costs thereon; and support such Headquarters reviews and evaluate SARS activities at project and field analysis and review levels.
 DOE

N81-22696*# Battelle Columbus Labs., Mountain View, Calif.
FATIGUE AND ASSOCIATED PERFORMANCE DECRE-

MENTS IN AIR TRANSPORT OPERATIONS

E. Gene Lyman and Harry W. Orlady 31 Mar. 1981 36 p refs
 (Contract NAS2-10060)
 (NASA-CR-166167) Avail: NTIS HC A03/MF A01 CSCL 05E

A study of safety reports was conducted to examine the hypothesis that fatigue and associated performance decrements occur in air transport operations, and that these are associated with some combination of factors: circadian desynchronization, duty time; pre-duty activity; sleep; work scheduling; workload; and environmental deprivation. The findings are based on a selected sample of reported incidents in which the reporter associated fatigue with the occurrence. In comparing the fatigue reports with a control set, significant performance decrements were found to exist related to time-of-day, awareness and attention to duty, less significantly, final phases of flights. The majority of the fatigue incidents involved such unsafe events as altitude deviations, takeoffs and landing without clearance, and the like. Considerations of duty and sleep are the major factors in the reported fatigue conditions.
 S.F.

N81-22883# Anacapa Sciences, Inc., Santa Barbara, Calif.
HUMAN FACTORS ANALYSIS AND DESIGN METHODS FOR NUCLEAR WASTE RETRIEVAL SYSTEMS: HUMAN FACTORS DESIGN METHODOLOGY AND INTEGRATION PLAN

S. M. Casey Jun. 1980 153 p refs
 (Contract W-7405-eng-48)
 (UCRL-15297-Vol-1) Avail: NTIS HC A08/MF A01

The nuclear waste retrieval system intended to be used for the removal of storage canisters (each canister containing a spent fuel rod assembly) located in an underground salt bed depository is discussed. The implementation of human factors engineering principles during the design and construction of the retrieval system facilities and equipment is reported. The methodology is structured around a basic system development effort involving preliminary development, equipment development, personnel subsystem development, and operational test and evaluation. Examples of application of the techniques in the analysis of human tasks, and equipment required in the removal of spent fuel canisters is provided. The framework for integrating human engineering with the rest of the system development effort is documented.
 DOE

N81-23234# Bureau of Mines, Pittsburgh, Pa.
CONTROLLED BURNOUT OF WASTED COAL ON ABANDONED COAL MINE LANDS

Robert F. Chaiken 1980 29 p refs
 (PB81-148231; BM-RI-8478) Avail: NTIS HC A03/MF A01 CSCL 13B

An approach to eliminating environmental and public safety hazards associated with fires in abandoned coal mines and waste banks involves the use of in situ combustion technology developed by the Federal Bureau of Mines to accelerate the burning of the wasted coals in place. This technology is used under exhaust ventilation control conditions that allow for total management of the hot gases produced. Combustion stoichiometries are optimized to minimize unburnt combustibles and to maximize the heat content of the gas products, which are exhausted at one or more fan locations. When necessary, scrubber systems are employed to remove air pollutants, such as sulfur dioxides; heat utilization systems are also employed to offset operational costs.
 GRA

N81-23471# General Electric Co., Schenectady, N. Y. Gas Turbine Div.

HIGH-RELIABILITY GAS TURBINE COMBINED-CYCLE DEVELOPMENT PROGRAM. PHASE 1: SUMMARY

R. G. Kunkel Jan. 1981 70 p 2 Vol.
 (EPRI Proj. 1187-3)
 (EPRI-AP-1681-SU) Avail: NTIS HC A04/MF A01

Tradeoff studies of reliability versus cost, performance, firing temperature and other parameters formed the basis for all major design approaches and decisions in the conceptual design of a gas turbine combined-cycle plant. The inherent reliability, as defined by field data, was used as a basis from which to predict the expected reliability and power cost of a variety of near term conceptual gas turbine hardware and cycle configurations. Results indicate that the highest reliability, the lowest power cost, and greatest fuels flexibility may not be found within one configuration. The gas turbine was conceptually developed around a 19850 F

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(10850 C) firing temperature cycle. The total plant was developed using maintainability, serviceability and the potential need for conversion to coal-derived fuels and other duty cycles. The controls and accessories were found to provide cost effective changes and modifications. DOE

N81-24054# Societe Nationale Industrielle Aerospatiale, Paris (France).

QUALITY IN DESIGN (LA QUALITE DANS LA CONCEPTION)

G. Corregge 1980 42 p In FRENCH Presented at FRAMATOME Conf., Paris, 26 Feb. 1980

(SNIAS-802-111-108) Avail: NTIS HC A03/MF A01

Those aspects of management which contribute to assuring the adequacy of a product (aircraft) to meet the needs of a customer for reliability, and to satisfy aeronautical certification, are analyzed. The optimal management of quality from the inception of an aircraft design to final checkout and acceptance of the manufactured system is sought. All available options are examined, following the flow of product development through the various phases of realization. Exhaustive lists of the means, methods, and mechanisms for getting the job done are presented, the favorable combination of which leads to a product well-adapted for user and official requirements. Author (ESA)

N81-24071# Advisory Group for Aerospace Research and Development, Neuilly-Sur-Seine (France).

TURBINE ENGINE TESTING

Jan. 1981 471 p refs In ENGLISH and FRENCH Proceedings of the 56th Symp. of the AGARD Propulsion and Energetic Panel, Turin, 29 Sep. - 3 Oct. 1980

(AGARD-CP-293; ISBN-92-835-0282-5) Avail: NTIS HC A21/MF A01

Increasing demands on turbine engines performance, durability, safety, and pollution emission require an improvement in test methods. Test methods are provided for the engine research and development engineers in order to help them meet the manufacturers', the buyers', and the users' test requirements for engine delivery, reliability, economy, and maintenance. A comprehensive survey on testing requirements for engine qualification and development are provided for both military and civil engines. Engine component testing and complete power plant testing are discussed. Trends for future testing are considered.

N81-24072# Registro Aeronautico Italiano, Rome. Div. Generale.

OVERVIEW OF ALL CIVIL AVIATION ENGINE CERTIFICATION/DEMONSTRATION REQUIREMENTS AND RATIONALE, I.E., FAA, CAA, ETCETERA

V. Fiorini In AGARD Turbine Engine Testing Jan. 1981 17 p refs

Avail: NTIS HC A21/MF A01

Two outstanding codes for civil certification of aircraft turbine engines, one adopted in the U.S., FAR 33, and the other widely adopted in Europe, JAR 'E', are discussed and compared. The different existing philosophies, procedures, and different manufacturers positions on both sides of the Atlantic are examined. Significant items are identified and are discussed extensively with the purpose of detailing a comparison between the two sets of rules as follows: power ratings; endurance testing; stress and fatigue aspects of rotating parts; foreign object ingestion; ice protection; and engine fault analysis. T.M.

N81-24305# California Univ., Livermore. Lawrence Livermore Lab.

FIRE PROTECTION RESEARCH FOR ENERGY TECHNOLOGY PROJECTS Report, FY 1979 Year-End

H. K. Hasegawa, N. J. Alvares, A. E. Lipska, H. Ford, and D. G. Beason Jan. 1981 92 p refs

(Contract W-7405-eng-48)

(UCID-18902) Avail: NTIS HC A05/MF A01

Fire protection measures for fusion energy experiments (FEE) are discussed in some detail. Ultimately, it is planned that the detailed study of fusion experiments will provide analytical methodology which can be applied to the full range of energy technology projects. Three major task areas are advanced: (1) determine the fire hazards of current FEE facilities; (2) assess the ability of accepted fire management strategies to meet and negate the hazard; (3) perform research into problem areas to

provide input into analytical fire growth and damage assessment models. DOE

N81-24459# Memphis Light, Gas and Water Div., Tenn. **QUALITY ASSURANCE/QUALITY CONTROL PROGRAM MANUAL**

13 Oct. 1980 242 p Prepared in cooperation with Foster Wheeler Energy Corp., Livingston, N.J.

(Contract DE-AC02-77ET-13046)

(DOE/ET-13046/T73) Avail: NTIS HC A11/MF A01

The organization and functional activities responsible for a quality assurance/quality control program are identified. The authority and responsibilities in planning, managing and controlling the program under codes, specifications, and standards are described. The interrelation of quality assurance/quality control responsibilities are also illustrated. R.C.T.

N81-24549# Department of Energy, Washington, D. C. Office of Program Coordination.

INVENTORY OF FEDERAL ENERGY-RELATED ENVIRONMENTAL AND SAFETY RESEARCH FOR FY 1979. VOLUME 1: EXECUTIVE SUMMARY

Dec. 1980 50 p refs

(DOE/EV-0057/2-Vol-1) Avail: NTIS HC A03/MF A01

Research and development (R and D) categories were reorganized into three main areas: environmental and safety control technology, technology impacts overview and assessments, and biological and environmental R and D and assessments. The inventory also breaks out research sponsored by various federal agencies and the amount of funding provided by each in various research categories. The format and index system allows efficient access to information compiled. Users are able to identify projects by log agency, performing organization, principal investigator and subject. DOE

N81-24550# Department of Energy, Washington, D. C. Office of Program Coordination.

INVENTORY OF FEDERAL ENERGY-RELATED ENVIRONMENTAL AND SAFETY RESEARCH FOR FY 1979. VOLUME 2: PROJECT LISTINGS AND INDEXES

Dec. 1980 694 p refs

(DOE/EV-0057/2-Vol-2) Avail: NTIS HC A99/MF A01

The research is arranged by log number, which groups the projects by reporting agency. The log number is a unique number assigned to each project from a block of numbers set aside for each contributing agency. Information elements included in the summary listings are project title, principal investigators, research organization, project number, contract number, supporting organization, funding level, related energy sources with numbers indicating percentages of effort devoted to each, and R and D categories. A brief description of each project is given, and this is followed by subject index terms that were assigned for computer searching and for generating the printed subject index. DOE

N81-24981# Meyer (A. F.) and Associates, Inc., McLean, Va. **SAFETY ANALYSIS AND REVIEW SYSTEM, PHASE 1 Final Report**

Ellen T. Browne Mar. 1981 8 p refs

(Contract DE-AM01-80ET-13650)

(DOE/ET-13650/9) Avail: NTIS HC A02/MF A01

Work completed in support of the implementation of the DOE Safety Analysis and Review System (SARS) is summarized. The following were among the issues identified as requiring further overview, assessment, and action by DOE: (1) there needs to be firm guidance from DOE Headquarters (HQ) in regard to SARS-related responsibilities and requirements of the DOE field offices; (2) a system must be established to track the applicability and progress of SARS for individual DOE operations; (3) a decision must be made by DOE officials as to whether review authority for moderate risk projects will be delegated to the field. As part of this, a detailed assessment of resources available for reviews, both at the field and HQ levels, needs to be accomplished; and (4) to be implemented effectively, SARS needs to be incorporated into the overall DOE project management system. DOE

N81-24984# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.

SYSTEM SAFETY IN STIRLING ENGINE DEVELOPMENT H. Bankaitis 1981 29 p refs Presented at the 5th. Intern. Systems Safety Conf., Denver, 26-31 Jul. 1981

(Contract DE-AI01-77CS-51040)

(NASA-TM-82615; DOE/NASA/51040-25; E-867) Avail: NTIS HC A03/MF A01 CSCL 10B

The DOE/NASA Stirling Engine Project Office has required that contractors make safety considerations an integral part of all phases of the Stirling engine development program. As an integral part of each engine design subtask, analyses are evolved to determine possible modes of failure. The accepted system safety analysis techniques (Fault Tree, FMEA, Hazards Analysis, etc.) are applied in various degrees of extent at the system, subsystem and component levels. The primary objectives are to identify critical failure areas, to enable removal of susceptibility to such failures or their effects from the system and to minimize risk. T.M.

N81-25050*# Douglas Aircraft Co., Inc., Long Beach, Calif. **TESTING OF AIRCRAFT PASSENGER SEAT CUSHION MATERIAL, FULL SCALE, DATA, VOLUME 2 Final Report, Apr. 1980 - Mar. 1981**

Kenneth J. Schutter, James G. Gaume, and Fred E. Duskin Nov. 1980 340 p

(Contract NAS9-16062)

(NASA-CR-160963; MDC-J4673-Vol-2) Avail: NTIS HC A15/MF A01 CSCL 13L

Burn characteristics of presently used and proposed seat cushion materials and types of constructions were determined. Eight different seat cushion configurations were subjected to full scale burn tests. Each cushion configuration was tested twice for a total of 16 tests. Two different fire sources were used: Jet A-fuel for eight tests, and a radiant energy source with propane flame for eight tests. Data were recorded for smoke density, cushion temperatures, radiant heat flux, animal response to combustion products, rate of weight loss of test specimens, cabin temperature, and type and content of gas within the cabin. When compared to existing seat cushions, the test specimens incorporating a fire barrier and those fabricated from advanced materials, using improved construction methods, exhibited significantly greater fire resistance. Flammability comparison tests were conducted upon one fire blocking configuration and one polyimide configuration. E.A.K.

N81-25051*# Douglas Aircraft Co., Inc., Long Beach, Calif. **TESTING OF AIRCRAFT PASSENGER SEAT CUSHION MATERIALS, FULL SCALE, TEST DESCRIPTION AND RESULTS, VOLUME 1 Final Report, 11 Mar. 1980 - 10 May 1981**

Kenneth J. Schutter, James G. Gaume, and Fred E. Duskin Feb. 1981 109 p refs

(Contract NAS9-16062)

(NASA-CR-160995-Vol-1) Avail: NTIS HC A06/MF A01 CSCL 01C

Eight different seat cushion configurations were subjected to full-scale burn tests. Each cushion configuration was tested twice for a total of sixteen tests. Two different fire sources were used. They consisted of one liter of Jet A fuel for eight tests and a radiant energy source with propane flame for eight tests. Both fire sources were ignited by a propane flame. During each test, data were recorded for smoke density, cushion temperatures, radiant heat flux, animal response to combustion products, rate of weight loss of test specimens, cabin temperature, and for the type and content of gas within the cabin atmosphere. When compared to existing passenger aircraft seat cushions, the test specimens incorporating a fire barrier and those fabricated from advanced materials, using improved construction methods, exhibited significantly greater fire resistance. DOE

N81-25086# Hamilton Standard, Windsor Locks, Conn. **RELIABILITY ADVANCEMENT FOR ELECTRONIC ENGINE CONTROLLERS, VOLUME 2: GUIDE TO DEVELOPMENT OF HIGH RELIABILITY ELECTRONIC ENGINE CONTROLLERS Final Report, Aug. 1977 - Apr. 1980**

C. Rabinowitz, R. Otterberg, K. Boucher, K. Walworth; and P. Cote Aug. 1980 249 p refs

(Contract F33615-77-C-2055; AF Proj. 3066)

(AD-A098614; HSER-7668-Vol-2; AFWAL-TR-80-2063-Vol-2) Avail: NTIS HC A11/MF A01 CSCL 21/5

Based upon the work done in evolving the preliminary design of 'Volume 1' Final Report; this document has been prepared to serve as a guide for developers of future high reliability gas turbine engine controls. After defining the control modes and

requirements for a variable cycle engine various options are considered regarding system configuration, redundancy management, system simplification, and fault handling. Principles for optimizing component mix and circuit design, along with possibilities for alternative implementations are presented. To successfully control the environmental exposure of the EEC, aspects of thorough packaging design are described. The entire reliability program of an organization plays a key role in the development of high reliability controls. Major elements of a successful program are discussed. Particular emphasis is placed upon implementation of reliability tests and screens designed to enhance electronic hardware reliability. Reliability mathematical modeling techniques are utilized to evaluate control options during system trade studies and to predict and enhance reliability growth during the design and development program and the production program. GRA

N81-25261*# National Aeronautics and Space Administration, Washington, D. C.

REPORT ON OCCUPATIONAL SAFETY AND HEALTH TO THE SECRETARY OF LABOR FOR CY 1980 Annual Report

1980 49 p refs

(NASA-TM-82357) Avail: NTIS HC A03/MF A01 CSCL 13L

Summary and evaluation of NASA occupational safety and health activities focus on: policy; personnel; funding. Training activities, inspection, record-keeping, and interagency activities are included. S.F.

N81-25263*# National Aeronautics and Space Administration, Lewis Research Center, Cleveland, Ohio.

SAFETY MANAGEMENT OF COMPLEX RESEARCH OPERATORS

William J. Brown 30 Jul. 1981 20 p refs Proposed for presentation at the 5th Intern. System Safety Conf., Denver, 30 Jul. 1981

(NASA-TM-81772; E-832) Avail: NTIS HC A02/MF A01 CSCL 13L

Complex research and technology operations present varied potential hazards which are addressed in a disciplined, independent safety review and approval process. Potential hazards vary from high energy fuels to hydrocarbon fuels, high pressure systems to high voltage systems, toxic chemicals to radioactive materials and high speed rotating machinery to high powered lasers. A Safety Permit System presently covers about 600 potentially hazardous operations. The Safety Management Program described is believed to be a major factor in maintaining an excellent safety record. S.F.

N81-25275# General Services Administration, Washington, D.C. **TRANSFORMER ROOM FIRE TESTS Final Report**

C. D. Fustich Mar. 1980 22 p

(PB81-154411; GSA/PBS-79-08)

Avail: NTIS

HC A02/MF A01 CSCL 13L

A series of transformer room fire tests are reported to demonstrate the shock hazard present when automatic sprinklers operate over energized electrical equipment. Fire protection was provided by standard 0.5 inch pendent automatic sprinklers temperature rated at 135 F and installed to give approximately 150 sq ft per head coverage. A 480 v dry transformer was used in the room to provide a three phase, four wire distribution system. It is shown that the induced currents in the test room during the various tests are relatively small and pose no appreciable personnel shock hazard. E.A.K.

N81-26391*# Boeing Aerospace Co., Seattle, Wash.

CAPACITOR DPA: DOES IT DO ANY GOOD?

David C. Porter In NASA, Marshall Space Flight Center Capacitor Technol., Appl. and Reliability Jun. 1981 p 125-129

Avail: NTIS HC A08/MF A01 CSCL 09A

Methods of destructive physical analysis (DPA) are suggested which might have more usefulness if the procedures followed lines of accelerated testing. A brief presentation of DPA procedures is followed by a discussion of their value. E.D.K.

N81-26392*# Martin Marietta Corp., Denver, Colo.

FAILURE ANALYSIS METHODS FOR CAPACITORS

R. L. Hildenbrand In NASA, Marshall Space Flight Center Capacitor Technol., Appl. and Reliability Jun. 1981 p 131-148

06 RELIABILITY AND QUALITY CONTROL

Avail: NTIS HC A08/MF A01 CSCL 09A

The basic steps in the failure analysis of discrete capacitors used in electronic circuit boards and hybrid assemblies are described. These steps include: visual examination; functional test; disassembly; isolation of the failure site; and documentation. E.D.K.

N81-27064# Federal Aviation Administration, Washington, D.C. Office of Aviation Safety.

SPECIAL AVIATION FIRE AND EXPLOSION REDUCTION (SAFER) ADVISORY COMMITTEE, VOLUME 2B Final Report, 26 Jun. 1978 - 26 Jun. 1980

J. H. Enders and E. C. Wood 26 Jun. 1980 194 p (AD-A099176; FAA-ASF-80-4-Vol-2B) Avail: NTIS HC A09/MF A01 CSCL 01/2

The factors affecting the ability of the aircraft cabin occupant to survive in the post crash fire environment and the range of solutions available are presented. The proceedings of the SAFER Committee and the FAA's responses to the committee's recommendations are reported. Information on crew protection and passenger evacuation is given. T.M.

N81-27065# Federal Aviation Administration, Washington, D.C. Office of Aviation Safety.

SPECIAL AVIATION FIRE AND EXPLOSION REDUCTION (SAFER) ADVISORY COMMITTEE, VOLUME 2A Final Report, 26 Jun. 1978 - 26 Jun. 1980

J. H. Enders and E. C. Wood 26 Jun. 1980 304 p refs (AD-A099147; FAA-ASF-80-4-Vol-2A) Avail: NTIS HC A14/MF A01 CSCL 01/2

The Special Aviation Fire and Explosion Reduction (SAFER) Advisory Committee and its technical supporting groups spent nearly 13 months from May 1979 through June 1980 examining the factors affecting the ability of the aircraft cabin occupant to survive in the post-crash fire environment and the range of solutions available. Presentations were made to the SAFER Committee by Committee members, technical supporting groups, the FAA, citizens and private firms. The broadly-constituted body of information developed and presented to the Committee formed the basis for Committee Findings and Recommendations. This volume contains technical subcommittee submittal related to interior cabin material's flammability, short term, solutions to the fire hazard and recommendations on Post Crash Fire Reduction. Author (GRA)

N81-27466*# Naval Material Command, Washington, D. C. Dept. of Material for Reliability and Maintainability and Quality Assurance.

MANAGEMENT OF RELIABILITY AND MAINTAINABILITY: A DISCIPLINED APPROACH TO FLEET READINESS

Willis J. Willoughby, Jr. In NASA. Goddard Space Flight Center Proc. of the 12th Ann. Precise Time and Time Interval Appl. and Planning Meeting Mar. 1981 p 13-55

Avail: NTIS HC A99/MF A01 CSCL 14D

Material acquisition fundamentals were reviewed and include: mission profile definition, stress analysis, derating criteria, circuit reliability, failure modes, and worst case analysis. Military system reliability was examined with emphasis on the sparing of equipment. The Navy's organizational strategy for 1980 is presented. T.M.

N81-27469*# Hughes Aircraft Co., El Segundo, Calif. Space and Communications Group.

RELIABILITY ACHIEVEMENT IN HIGH TECHNOLOGY SPACE SYSTEMS

Dean L. Lindstrom In NASA. Goddard Space Flight Center Proc. of the 12th Ann. Precise Time and Time Interval Appl. and Planning Meeting Mar. 1981 p 57-67
Avail: NTIS HC A99/MF A01 CSCL 14D

The production of failure-free hardware is discussed. The elements required to achieve such hardware are: technical expertise to design, analyze, and fully understand the design; use of high reliability parts and materials control in the manufacturing process; and testing to understand the system and weed out defects. The durability of the Hughes family of satellites is highlighted. T.M.

N81-27470*# General Dynamics Corp., Pomona, Calif.

APPROACH TO RELIABILITY WHEN APPLYING NEW TECHNOLOGIES

John C. Bear In NASA. Goddard Space Flight Center Proc. of the 12th Ann. Precise Time and Time Interval Appl. and Planning Meeting Mar. 1981 p 69-79

Avail: NTIS HC A99/MF A01 CSCL 14D

Tactical weapon systems, while different in many respects from PTTI applications, face similar risks in achieving reliability in development. General principles derived from experience in achieving high reliability in tactical weapon systems are selectively summarized for application to new technologies in unusual environments. T.M.

N81-27471*# Honeywell, Inc., Minneapolis, Minn. Reliability Dept.

RELIABILITY AND THE DESIGN PROCESS AT HONEYWELL AVIONICS DIVISION

Alex Bezat In NASA. Goddard Space Flight Center Proc. of the 12th Ann. Precise Time and Time Interval Appl. and Planning Meeting Mar. 1981 p 81-97

Avail: NTIS HC A99/MF A01 CSCL 14D

The division's philosophy for designed-in reliability and a comparison of reliability programs for space, manned military aircraft, and commercial aircraft, are presented. Topics include: the reliability interface with design and production; the concept phase through final proposal; the design, development, test and evaluation phase; the production phase; and the commonality among space, military, and commercial avionics. T.M.

N81-27543# Engins Matra, Velizy (France).

RELIABILITY GROWTH THEORY AND ITS APPLICATION TO A PROJECT [CROISSANCE DE LA FIABILITE THEORIE ET MISE EN OEUVRE DANS LE CADRE D'UN PROJET]
J. Ringle 23 Jun. 1980 25 p refs In FRENCH
Avail: NTIS HC A02/MF A01

Reliability growth theory is discussed as a tool with which contractual reliability specifications on equipment to be developed can be met. The concept reliability growth hinges on the mathematical representation of the tendency for operational reliability to approach provisional reliability as a function of time or of the progression of development stages. The Duane model of reliability growth is presented. Project management which takes into consideration reliability growth curves, resultant of a properly posed reliability growth model, is described. The planning of a reliability control program which allows verification of predicted reliability growth is then treated. Author (ESA)

N81-27544# Engins Matra, Velizy (France).

PROCESSING INFORMATION COLLECTED AS A RESULT OF MAINTENANCE PROCEDURES MAKING UP A PROGRAM [TRAITEMENT DE L'INFORMATION RESULTANT DES TRAVAUX DE MAINTENANCE SITUES DANS LE CADRE D'UN PROGRAMME]

M. Deschamps 7 Feb. 1980 16 p In FRENCH
(N-FIT-772) Avail: NTIS HC A02/MF A01

Computerized detection of faulty behavior in missile systems is formalized. Compilation and content of resulting maintenance worksheets is described. The informative value of maintenance data is established to: (1) to assure a sufficient probability that a missile functions effectively; and (2) monitor the cost of maintenance as well as to identify means of reducing cost if necessary. A missile lot is considered. Given that all the missiles must operate under the same conditions, the relative failure rates, which are comparable with provisional reliability test results, are calculated for each component and subsystem. The chronological classification of the data (failure, with or without repair) allows for reliability determination for the missile lot, based on a population model. Author (ESA)

N81-27545# Engins Matra, Velizy (France).

APPROPOS TO THE DEFINITION OF RELIABILITY [A PROPOS DE LA DEFINITION DE LA FIABILITE]

M. Deschamps 1980 6 p In FRENCH
(N-FIT-835) Avail: NTIS HC A02/MF A01

The appropriateness of a scientific (mathematical) definition of system reliability is considered. The equitable specification of reliability as a design criterion is examined. Outright dependence on performance quantification is shown to lead to ambiguities, if not abuses of common sense. The probabilities of various causes of system degradation are examined, and the concept of maintainability is introduced. It is postulated that when required

performance is explicit and quantifiable, then technical reliability can be the percentage of performance at which economical maintenance is assured. Author (ESA)

N81-27712# Research Triangle Inst., Research Triangle Park, N. C.

QUALITY ASSURANCE GUIDELINES FOR ENVIRONMENTAL HEALTH RESEARCH

P. A. Cunningham, K. W. Gold, T. J. Hughes, L. E. Myers, and C. E. Tatsch Jan. 1981 149 p refs

(Contract EPA-68-02-3226)

(PB81-172678; EPA-600/2-81-006)

Avail: NTIS

HC A07/MF A01 CSCL 06F

Conceptual guidelines are provided for the development, implementation and evaluation of research task quality assurance plans for the staff of the Health Effects Research Laboratory (HERL/RTP) of the U.S. Environmental Protection Agency. The guidelines describe the HERL-RTP Quality Assurance (QA) organization and the QA responsibility of both management and technical research personnel in relation to the mandatory Agency QA policy and task data quality requirements. Specific guidelines for atmosphere generation, dose monitoring and animal research are included. GRA

N81-28110# Hercules Powder Co., Cumberland, Md. Ballistics Lab.

SAFETY ANALYSIS OF THE 700-HORSEPOWER COMBUSTION TEST FACILITY

B. D. Berkey May 1981 57 p refs

(Contract DE-AC22-80PC-30198)

(DOE/PC-30198/T4; HERC-81-25)

Avail: NTIS

HC A04/MF A01

A safety analysis is provided of the 700 h.p. Combustion Test Facility located in the Pittsburgh Energy Technology Center. Safety related measures were incorporated into the design, construction, and operation of the Combustion Test Facility. These include: nitrogen addition to the coal storage bin, slurry hopper, roller mill and pulverizer baghouse; use of low oxygen content combustion gas for coal conveying; an oxygen analyzer for the combustion gas; insulation on hot surfaces; proper classification of electrical equipment; process monitoring instrumentation and planned remote television monitoring system. Analysis of the system considering these factors resulted in the determination of overall probabilities of occurrence of hazards. The identified hazards include coal dust ignition by hot ductwork and equipment, loss of inerting within the coal conveying system leading to a coal dust fire, and ignition of hydrocarbon vapors spilled oil, or slurry. DOE

N81-29079# Aeroplane and Armament Experimental Establishment, Boscombe Down (England).

ELECTRO-MAGNETIC COMPATIBILITY: THE DETERMINATION OF SAFETY FOR CRITICAL SYSTEMS

G. M. Smith In AGARD Subsystem Testing and Flight Test Instr. Apr. 1981 6 p refs

Avail: NTIS HC A14/MF A01

The problems of certification of the fitness of military aircraft to enter service have increased significantly with the introduction of electronic equipments into areas of the aircraft which directly relate to primary flight safety. The effects of self generated interference as well as effects due to the external environment are considered. The establishment of adequate margins of safety for these systems requires changes to equipment test methods and procurement procedures. The problems are reviewed and alternative approaches described. R.C.T.

N81-29080# Test Wing (6510th) Edwards AFB, Calif. RELIABILITY AND MAINTAINABILITY EVALUATION DURING INITIAL TESTING

Jan M. Howell In AGARD Subsystem Testing and Flight Test Instr. Apr. 1981 8 p refs

Avail: NTIS HC A14/MF A01

The significance of extensive reliability and maintainability evaluations of modern weapon systems is considered. Particular emphasis is given to the ability of such evaluation to ensure the highest quality weapon system is delivered to the user within existing acquisition cost and schedule constraints. The methodology and information available from these evaluations are discussed. R.C.T.

N81-29459# Midwest Research Inst., Golden, Colo. Solar Energy Research Inst.

EVALUATION OF CONVENTIONAL ELECTRIC POWER GENERATING INDUSTRY QUALITY ASSURANCE AND RELIABILITY PRACTICES

R. T. Anderson and H. A. Lauffenburger Mar. 1981 110 p refs

(Contract DE-AC02-77CH-00178)

(SERI/TR-742-784) Avail: NTIS HC A06/MF A01

The techniques and practices utilized in an allied industry (electric power generation) that might serve as a baseline for formulating Quality Assurance and Reliability (QA and R) procedures for photovoltaic solar energy systems were studied. The study results provide direct near term input for establishing validation methods as part of the SERI performance criteria and test standards development task. DOE

N81-29883# North Carolina Univ. at Chapel Hill.

MULTIVARIATE DEPENDENT RELEVATIONS WITH APPLICATIONS, AND RELATED TOPICS

Norman L. Johnson and Samuel Kotz (Maryland Univ., College Park) Jul. 1981 14 p refs

(Contract N00014-81-K-0301; Grant NSF MCS-80-21704)

(AD-A100686; MIMED-SER-1342)

Avail: NTIS

HC A02/MF A01 CSCL 12/1

'Relevation' is the name given by Krakowski to the distribution of failure time of a replacement from an aging stock. The present authors (Johnson and Kotz) have extended this concept to include (1) hierarchical replacement systems and (2) dependence between lifetimes of original and replacement items. In this paper, we present some further developments, including first steps towards a synthesis of (1) and (2). GRA

N81-30102# BDM Corp., McLean, Va.

DEFINITION OF INVESTIGATIVE AREAS FOR HUMAN-FACTOR ASPECTS OF AIRCRAFT ACCIDENTS Final Report, 13 Mar. - 23 Dec. 1979

Michael Fineberg, John Woelfel, Robin Ely, and Marcia Smith Dec. 1980 130 p refs

(Contract F33615-79-C-0608; AF Proj. 2787)

(AD-A101601; BDM/W-79-733-TR; SAM-TR-80-48) Avail: NTIS HC A07/MF A01 CSCL 01/3

This paper is the final report of a 9-month survey effort designed to identify the major pilot factors involved in aircraft mishaps, rank order the major pilot factors in relation to a return-on-investment metric, identify aviation technologies with a high potential for diagnosing and/or reducing these pilot factors, and suggest potentially high-payoff programs for researching the pilot factor aspects of aircraft for the purpose of reducing their incidence. Author (GRA)

N81-30799# Whitston Associates, Pasadena, Calif.

ASSESSMENT OF THE USE OF HUMAN FACTORS IN THE DESIGN OF FOSSIL-FIRED STEAM-GENERATING SYSTEMS Final Report

J. A. Oliver, J. E. Baker, and J. W. Roth Apr. 1981 119 p

Sponsored by Electric Power Research Inst.

(EPRI Proj. 1266-20)

(EPRI-CS-1760) Avail: NTIS HC A06/MF A01

A method was developed to evaluate the level of implementation of established human factors data and principles in the design of a present or future fossil fired power plant. The methodology is based on knowing the distribution of human error between three generic locations within the plant and the importance of regarding their impact on the performance of operating and maintenance personnel in generic plant locations. A mathematical expression was developed whereby scores, corresponding to the level of implementation of the selected Human Factors Variables could be assigned. This evaluation technique was applied to three modern fossil fired steam generating systems for verification of its adequacy. Results are presented of comparisons of the three fossil fired steam generating systems to both the electric utility industries and all industries use of human factors data and principles during plant design. DOE

N81-30950# Los Alamos Scientific Lab., N. Mex. Space and Terrestrial Systems Div.

SPACE NUCLEAR SAFETY AND FUELS PROGRAM Progress

06 RELIABILITY AND QUALITY CONTROL

Report

S. E. Bronisz, comp. May 1981 29 p

(Contract W-7405-eng-36)

(LA-8865-PR) Avail: NTIS HC A03/MF A01

Studies related to the use of (238) PuO₂ in radioisotopic power systems carried out for the Space and Terrestrial Systems Division of the US Department of Energy are described. DOE

N81-31213*# Textron Bell Helicopter, Fort Worth, Tex. HELICOPTER PROPULSION SYSTEM RELIABILITY AND ENGINE MONITORING ASSESSMENTS

John A. Murphy /in NASA. Lewis Res. Center Aircraft Engine Diagnostics 1981 p 311-322 refs

(Contract NAS2-10722)

Avail: NTIS HC A17/MF A01 CSCL 21E

The major short life, unreliable, and high maintenance engine and power components and subsystems in current civil helicopters were identified. Categories included both reciprocating and turbine engines, single and multiple engine configurations, single and tandem rotor vehicles, and light, medium, and heavy helicopters. The major focus was on the following parameters: accident rate data; maintenance rate data; and direct operator input. R.C.T.

N81-31214*# Pratt and Whitney Aircraft Group, East Hartford, Conn. ENGINE HEALTH MONITORING SYSTEMS: TOOLS FOR IMPROVED MAINTENANCE MANAGEMENT IN THE 1980'S

Jonathan C. Kimball /in NASA. Lewis Res. Center Aircraft Engine Diagnostics 1981 p 323-340 refs

Avail: NTIS HC A17/MF A01 CSCL 21E

The performance monitoring aspect of maintenance, characteristic of the engine health monitoring system are discussed. An overview of the system activities is presented and a summary of programs for improved monitoring in the 1980's are discussed. R.C.T.

N81-31215*# General Electric Co., Schenectady, N. Y. ENGINE CONDITION MONITORING: CF6 FAMILY 60'S THROUGH THE 80'S

H. J. Kent and Gerwin Dienger (Lufthansa German Airlines) /in NASA. Lewis Res. Center Aircraft Engine Diagnostics 1981 p 341-356

Avail: NTIS HC A17/MF A01 CSCL 21E

The on condition program is described in terms of its effectiveness as a maintenance tool both at the line station as well as at home base by the early detection of engine faults, erroneous instrumentation signals and by verification of engine health. The system encompasses all known methods from manual procedures to the fully automated airborne integrated data system. R.C.T.

N81-31216*# General Electric Co., Schenectady, N. Y. ENGINE HEALTH MONITORING: AN ADVANCED SYSTEM

R. J. E. Dyson /in NASA. Lewis Res. Center Aircraft Engine Diagnostics 1981 p 357-375 refs

(Contract F33615-79-C-2092)

Avail: NTIS HC A17/MF A01 CSCL 21E

The advanced propulsion monitoring system is described. The system was developed in order to fulfill a growing need for effective engine health monitoring. This need is generated by military requirements for increased performance and efficiency in more complex propulsion systems, while maintaining or improving the cost to operate. This program represents a vital technological step in the advancement of the state of the art for monitoring systems in terms of reliability, flexibility, accuracy, and provision of user oriented results. It draws heavily on the technology and control theory developed for modern, complex, electronically controlled engines and utilizes engine information which is a by-product of such a system. R.C.T.

N81-31289*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif. FAILURE OF MORPHOLOGY OF (0 DEG)8 GRAPHITE/ EPOXY AS INFLUENCED BY ENVIRONMENTS AND PROCESSING

Linda L. Clements and Michael J. Adamson Aug. 1981 25 p refs

(NASA-TM-81318; A-8684) Avail: NTIS HC A02/MF A01

CSCL 11D

Optical and scanning electron microscopy were used to investigate the failure morphology of graphite/epoxy specimens which had been tested until tensile failure. Failure morphology was studied as a function of the quality control variables of specimen preparation technique, prepreg batch, and cure condition, and also as a function of the environmental parameters of temperature and moisture content. Defective specimens were found to exhibit a low energy failure morphology. Poor specimen edge preparation and one batch of prepreg when tested at elevated temperature or moisture content also exhibited energy failure morphology. Postcuring had no effect on strength but did slightly alter failure morphology. Temperature or moisture appeared to decrease flaw sensitivity and thus increase strength; however, moisture also appeared to increase interfacial debonding between filament and matrix. When combined moisture and temperature increased interfacial debonding and made the epoxy matrix more prone to fracture. Author

N81-31822# Oak Ridge National Lab., Tenn.

DOING A RISK ANALYSIS

H. Inhaber 1981 18 p Presented at the 2nd Ann. Eastern Reg. Safety Congr., Philadelphia, 30 Apr. 1981

(Contract W-7405-eng-26)

(CONF-810480-1) Avail: NTIS HC A02/MF A01

The methodologies which can be used to determine the overall risk of any energy system are outlined. Termed risk accounting, it is calculated in analogy to energy accounting, which attempts to determine all the energy inputs into a system in comparison to the net output. The most important conclusion of this analysis is that the risk from non-conventional energy sources can be as high as, or even higher than that of conventional sources. In particular, it tends to be considerably higher than that of nuclear power, the newest of the conventional sources. The ratio is, in some cases, as high as 10 or 100. The results can be divided into occupational risk, borne by those who construct, fabricate and maintain the energy sources, and danger to members of the public. The total risk of a system is then the sum of occupational and public risk. The occupational man-days lost per unit energy averaged over the system lifetime are given. DOE

N81-31924 Texas A&M Univ., College Station.

AN EXAMINATION AND COMPARISON OF TWO SAMPLING PROCEDURES FOR ESTIMATING THE RELIABILITY AND AMOUNT OF ERROR IN AN INFORMATION PROCESSING SYSTEM Ph.D. Thesis

Mark Eathan Eakin 1980 144 p

Avail: Univ. Microfilms Order No. 8111395

Several questions on sampling and estimation in information processing systems that are in series with k-steps are addressed. Two sampling schemes, sampling each step and sampling only output, are investigated. Criteria are developed to compare the two sampling plans. Sampling each step requires construction of optimal sample size allocation formulas. Optimal allocation means allocation of the sampling to the processing steps in order to minimize variance of the estimators being used. Sample size formulas use a priori numerical information. Graphs are exhibited to show the effect of incorrect a priori numerical information on the variance of an estimator. Sample size procedures are compared with an existing procedure. Nonclassical estimation is also adapted to the two sampling plans. Dissert. Abstr.

N81-32297# Mason and Hanger-Silas Mason Co., Inc., Amarillo, Tex.

EVALUATION OF MACHINING SAFETY: PBX 9404 AND LX-10. PROCESS DEVELOPMENT: ENDEAVOR NO. 301

Norman O. Rhoton Jul. 1981 18 p

(Contract DE-AC04-76DP-00487)

(MHSMP-81-31) Avail: NTIS HC A02/MF A01

Preliminary machining safety tests for PBX 9404 and LX-10 are reported. Both normal and runaway machining conditions were investigated in an attempt to determine threshold reaction levels for the two explosives on a lathe, band saw and drill press. Five type cutting operations and slippage of the explosive on a vacuum fixture were evaluated. The presence or absence of reaction was determined via a TV monitor and no sub x detection using a chemiluminescence monitor. The evolution of NO sub x was detected in a large number of the tests. No sub

x evolution from PBX 9404 was detected in a large number of the tests. The No sub x evolution from PBX 9404 was detected in most cases at milder machining conditions than from LX-10. Only during most cases at milder machining conditions than from LX-10. Only during drilling tests with PBX 9404 was there evidence of reactions more severe than NO sub x evolution. Burning and/or higher order reactions were not observed for any test. DOE

N81-32439# Battelle Pacific Northwest Labs., Richland, Wash.
ADVANCED CONCEPTS TEST (ACT) FACILITY. SUMMARY SAFETY REPORT Interim Report
 R. T. Allemann Jul. 1981 31 p refs
 (Contract DE-AC06-76RL-01830; EPRI Proj. 422-3)
 (EPRI-CS-1915) Avail: NTIS HC A03/MF A01

As a test of a water-conserving way of cooling thermal power plants, a large-scale test of dry/wet cooling using the ammonia phase-change system, designated the Advanced Concepts Test (ACT), is being constructed at Pacific Gas and Electric Company's Kern Station at Bakersfield. A summary of the safety analyses and considerations that have been done for the facility is presented. These show that the ACT facility is an industrially safe system, and that the safety precautions taken assure that no one will be injured during the course of the testing. The application of industrial codes, safety management, an operational and emergency procedures is discussed. DOE

N81-32911# Sheffield Univ. (England). Dept. of Control Engineering.

LABORATORY EXPERIMENT ON THE CONTROL OF DISTILLATION COLUMN PRESSURE BY MICROPROCESSOR

J. B. Edwards Sep. 1980 23 p
 (RR-124) Avail: NTIS HC A02/MF A01

The distillation column and its operation is described. The theoretical considerations for measurement using microprocessor control are covered and details of the hardware and software are described. General operating and safety procedures are summarized. Diagrams show the general arrangement of the instrument and its control and the main features of the control program, together with examples of closed loop response.

Author (ESA)

N81-33196# Dayton Univ., Ohio. Research Inst.
ALTERNATE T-38 TRANSPARENCY DEVELOPMENT. PART 1: INITIAL ANALYSIS AND DESIGN Final Report, Jan. 1979 - Sep. 1980

Blaine S. West and Kenneth I. Clayton Wright-Patterson AFB, Ohio AFWAL Nov. 1980 58 p refs 2 Vol.
 (Contracts F33615-76-C-3103; F33615-80-C-3401; AF Proj. 2202; AF Proj. 1926)
 (AD-A103261; UDR-TR-80-91-Pt-1; AFWAL-TR-80-3132-Pt-1)
 Avail: NTIS HC A04/MF A01 CSCL 01/3

T-38 missions at speeds above the existing crew enclosure damage threshold will result in flight safety risk to aircraft and crew. This report documents the design development of alternate T-38 transparencies having the capability of defeating the impact of a four pound bird at aircraft speeds up to 400 knots. To accomplish the desired windshield/canopy redesign, a feasibility study was conducted, damage probability was determined, the birdstrike capability of existing transparencies was experimentally evaluated, edge attachment screening specimens were laboratory tested, and finite element analyses were made. Major findings from each task have been integrated into the detail design of a birdstrike resistant forward windshield panel, recommended for full-scale hardware fabrication, testing, and evaluation. Forward canopy and instructor windshield concepts are also discussed.

Author (GRA)

N81-33197# Dayton Univ., Ohio. Research Inst.
ALTERNATE T-38 TRANSPARENCY DEVELOPMENT. PART 2: BASELINE BIRDSTRIKE TESTING Final Report, Jun. 1979 - Oct. 1980

Blaine S. West Wright-Patterson AFB, Ohio AFWAL Dec. 1980 92 p 2 Vol.
 (Contracts F33615-76-C-3103; F33615-80-C-3401; AF Proj. 2202; AF Proj. 1962)
 (AD-A103262; UDR-TR-80-61-Pt-2; AFWAL-TR-80-3132-Pt-2)
 Avail: NTIS HC A05/MF A01 CSCL 01/3

T-38 missions at speeds above the existing crew enclosure damage threshold will result in flight safety risk to aircraft. This report documents the results of a full-scale flight hardware test program to establish the bird impact resistance of existing T-38 forward transparencies. The failure threshold for the forward windshield and forward canopy for a four-pound birdstrike at six impact locations was established. Test results are reported and discussed in detail. Author (GRA)

ECONOMIC FACTORS

Includes expenditures, financial management, budgeting, life-cycle costs, design-cost, cost estimating, cost effectiveness, cost analysis, and marketing.

A81-11903 # Radiation of internal waves during vertical motion of bodies through a nonhomogeneous fluid (Izluhenie vnutrennikh voln pri vertikal'nom dvizhenii tel cherez neodnorodnuiu zhidkost'). V. A. Gorodtsov (Akademii Nauk SSSR, Institut Problem Mekhaniki, Moscow, USSR). *Inzhenerno-Fizicheskii Zhurnal*, vol. 39, Oct. 1980, p. 619-623. 7 refs. In Russian.

Subsonic vertical motion of bodies in a stratified medium is examined by simulation with the motion of a system of point sources. A formula is given for the spectral energy distribution of internal-wave radiation emitted by a source along the axis of motion. Simple formulas are also provided for doublet energy losses in two- and three-dimensional geometries. T.M.

A81-11241 # The bucks don't stop at the first estimate for facilities. J. J. O'Rourke (Ralf M. Parson Co., Pasadena, Calif.). *Astronautics and Aeronautics*, vol. 18, Nov. 1980, p. 32-36.

It is argued that program advocates do not seem to consider facilities in the same light as the high technology of aerospace vehicles and aircraft, with their related software and support equipment. Yet the acquisition of a facility may turn out to be more complex, time-consuming, and challenging than the technological program it will be designed and constructed to support, particularly for a first-of-a-kind program. It is suggested that aerospace needs streamlined contracting methods to produce technically sound major facilities on time. Some proposals for avoiding cost growth are presented. B.J.

A81-11904 # Influence of turbulence on the characteristics of a glow discharge (O vliianii turbulentnosti na kharakteristiki tleishchego razriada). R. R. Ziganshin, R. Kh. Ismagilov, and M. A. Minushev (Kazanskii Aviatsonnyi Institut, Kazan, USSR). *Inzhenerno-Fizicheskii Zhurnal*, vol. 39, Oct. 1980, p. 636-642. 9 refs. In Russian.

An analytical solution is given for a system of equations describing a glow-discharge column with turbulent gas flow in cases where the conditions imposed by Schottky theory are valid. The mean-square distribution of discharge density fluctuations across the radius of the discharge column is determined. Proposed formulas can be used to calculate the column characteristics for known Reynolds number and known degree of flow turbulence. T.M.

A81-11908 # Equations of generalized thermoelasticity for a Cosserat medium (Uravneniia obobshchennoi termouprugosti sredy Kossera). V. N. Smirnov. *Inzhenerno-Fizicheskii Zhurnal*, vol. 39, Oct. 1980, p. 716-723. 15 refs. In Russian.

A system of thermoelasticity equations for a Cosserat medium is derived with allowance for finite velocity of heat propagation. These equations are used to obtain a basic energy equation employed to demonstrate uniqueness of the solution for the boundary value problem corresponding to the derived equations. T.M.

A81-11922 # Study of heat transfers in flames (Etude des transferts thermiques dans les flammes). D. Dutoya. (Colloque sur l'Utilisation Rationnelle de l'Energie, Perpignan, France, Oct. 1-3, 1980.) *ONERA, TP* no. 1980-124, 1980. 17 p. In French.

Turbulent flames of premixed combustion, as found in turbojet engine combustion chambers, are shown to be characterized by high fluctuations in both temperature and concentration levels. Aerothermodynamic flame parameters which are measured at the heart of an experimental combustion chamber include the flame's average speed, temperature, and concentration as well as speed and temperature

fluctuations. It is found that heat exchanges between the flame and the walls of the combustion chamber are essentially convective. Flux distributions and exchange coefficients are measured in diverse flame configurations. The effect of speed and turbulence of the upstream flow of flame, as well as the degree and rate of superoxidation are examined. Results show the importance of the relation between the characteristic time of the chemical reaction and the aerodynamic turbulence, and that the chamber wall actually accelerates the process of turbulent combustion at the limiting layer, thereby creating an increase in heat exchanges at the front of the flame.

A.C.W.

A81-11928 The numerical solution of crack problems in plane elasticity in the case of loading discontinuities. N. I. Ioakimidis (Athens, National Technical University, Athens, Greece). *Engineering Fracture Mechanics*, vol. 13, no. 4, 1980, p. 709-716. 23 refs. Research sponsored by the National Hellenic Research Foundation.

The direct quadrature method of numerical solution of Cauchy type singular integral equations encountered in plane elasticity crack problems is applied to the case where the loading distribution along the crack edges presents jump discontinuities. This is made by using a well-known modification of the quadrature method which is free of undesirable errors due to the loading discontinuities. Hence, the method is ideal to treat the aforementioned class of crack problems and, particularly, crack problems where the Dugdale-Barenblatt elastic-perfectly plastic model is adopted. Finally, a numerical application of the method to the problem of a periodic array of cracks with a loading distribution presenting a jump discontinuity is made. The numerical results obtained in this problem compare favorably with the corresponding theoretical results available in this special problem. (Author)

A81-18941 The Beta II plasma-gun mechanical design and construction. L. Pedrotti, G. Deis, R. Wong, M. Calderon, A. Chargin, and D. Garner (California, University, Livermore, Calif.). In: Symposium on Engineering Problems of Fusion Research, 8th, San Francisco, Calif., November 13-16, 1979, Proceedings. Volume 1. Piscataway, N.J., Institute of Electrical and Electronics Engineers, Inc., 1979, p. 203-208. 8 refs. Contract No. W-7405-eng-48.

The mechanical design and construction of the magnetized coaxial plasma gun of the Beta II facility are examined together with the diagnostic devices necessary to demonstrate the formation of field-reversed rings. The gun features 150-cm long coaxial electrodes of 15 and 30 cm diameters insulated in the breech by an alumina insulator. A fast gas valve is nested within the inner electrode midway between the breech and the muzzle. Power to the electrodes is routed through a large, low-inductance collector plate assembly spaced 20 cm from the concentric electrodes to allow the field lines to close without going through the massive collector plate assembly. Consideration is given to the magnetic field design, inner solenoid cooling, magnet fabrication, magnet structural calculations, and the features of the outer electrode, gas valve, and collector plates. V.L.

A81-18948 An analysis of critical current-bend strain relationships in composite Nb₃Sn superconducting wires. T. Luhman and D. O. Welch (Brookhaven National Laboratory, Upton, N.Y.). In: Symposium on Engineering Problems of Fusion Research, 8th, San Francisco, Calif., November 13-16, 1979, Proceedings. Volume 1. Piscataway, N.J., Institute of Electrical and Electronics Engineers, Inc., 1979, p. 241-244. Research supported by the U.S. Department of Energy.

The dependence of critical current on bending strains in monofilamentary Nb₃Sn wires is computed taking a shift in the composite neutral axis which occurs during bending into account. The I(c) bend strain behavior was predicted for a series of monofilamentary conductors from I(c)-tensile strain measurements. It is concluded that predicting I(c)-bend strain relationships at magnetic fields other than those for which I(c)-tensile strain data is available should be possible providing a measure of the parameter a/J(1) is available. A.T.

A81-18953 Fabrication and testing of the Nb₃Sn superconductor for High-Field Test Facility /HFTF/. C. Spencer, E. Adam, E. Gregory, W. Marancik, P. Sanger (Airco, Inc., Carteret,

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N.J.), R. Scanlan, and D. Cornish (California, University, Livermore, Calif.). In: Symposium on Engineering Problems of Fusion Research, 8th, San Francisco, Calif., November 13-16, 1979, Proceedings. Volume 1. Piscataway, N.J., Institute of Electrical and Electronics Engineers, Inc., 1979, p. 265-268. Contract No. W-7405-eng-48.

A 5000 A - 12 T fully stable Nb₃Sn superconductor has to be produced for the insert magnet of the High-Field Test Facility being built at Lawrence Livermore Laboratory. A process is described which permits the fabrication of long lengths of large fully transposed monolithic filaments of Nb₃Sn. Measurements of critical current as a function of magnetic field and longitudinal strain on prototype samples are reported. (Author)

A81-18956 TEXT overview and status report. D. Brower, G. Cardwell, K. Gentle, W. Harris, S. Hutchins, M. Sheets, and P. Wildi (Texas, University, Austin, Tex.). In: Symposium on Engineering Problems of Fusion Research, 8th, San Francisco, Calif., November 13-16, 1979, Proceedings. Volume 1. Piscataway, N.J., Institute of Electrical and Electronics Engineers, Inc., 1979, p. 278-281. 14 refs. Contract No. DE-AC05-78ET-53043.

The design features and the present status of the Texas Experimental Tokamak are reviewed with reference to the central control system, motor generator and toroidal field rectifier system, toroidal field coils, and iron core. The tokamak utilizes an iron core (1.6 Vs), has a major radius of 100 cm, limiter radius of 28 cm, a toroidal magnetic field of 3 Tesla, and a minimal plasma current of 400 kA with a 300 ms flat-top. Its design provides maximum accessibility to the plasma, a relatively high repetition rate (30 shots per min), and a long life (10 to the 6th shots at the design level).

V.L.

A81-18957 The beta II field-reversed experiment. R. R. Rubert, S. R. Bishop, A. K. Chargin, and M. O. Calderon (California, University, Livermore, Calif.). In: Symposium on Engineering Problems of Fusion Research, 8th, San Francisco, Calif., November 13-16, 1979, Proceedings. Volume 1. Piscataway, N.J., Institute of Electrical and Electronics Engineers, Inc., 1979, p. 282-285. Contract No. W-7405-eng-48.

The Beta II test facility represents a modification of the 2XIIIB experimental facility and is intended for field-reversed experiments and the testing of components of the Mirror Fusion Test Facility. Major changes from the 2XIIIB experiment include the replacement of streaming guns with a magnetized coaxial plasma gun, and the addition of a reflex ion source in place of two of the 2XIIIB neutral beams. Trapping experiments on the Beta II system are to be conducted using two of the existing coils in the system: the west end of the Ying-Yang compression magnets and the east fast-gate magnet. Other Beta II components to be used for plasma heating and control include the solenoid guidefields, a vacuum system consisting of 100 sq m of liquid nitrogen cooled liners and 100 m of titanium getter wire, and 10 neutral beams run at 20 kV and generating 420 equivalent amps of current. Field reversals with a ratio of the change in field to the field of greater than 2 have already been achieved on the facility using a guide field of 4.5 kG. A.L.W.

A81-19343 Optimal cost design at CNES (La conception à coûts optimisés au C.N.E.S.). M. Petitdemange (Centre National d'Études Spatiales, Paris, France). *L'Aéronautique et l'Astronautique*, no. 84, 1980, p. 31-37. In French.

The contractual aspects of the application of the optimal cost design methodology by a program manager and an industrial designer and manufacturer are considered for the case of the relation between CNES and company involved in the Ariane launcher program. Principles and motivation for engaging in optimal cost design, which represents the study of production costs during the development phase of a project in order to obtain specified technical performance within the budget allotted, are discussed. The stages of carrying out an optimal cost design program are examined, with attention given to the choice of products to be designed in this manner, the predesign of the products, the determination of production cost objectives, the determination of contractual terms and the prime interest formula, and the presentation of production costs. Finally, advantages and obligations of the approach are pointed out. A.L.W.

A81-19346 Aircraft engine programs employing cost objectives (Programmes de moteurs d'avions à objectifs de coût). C. Foure. *L'Aéronautique et l'Astronautique*, no. 84, 1980, p. 41, 43-48. In French.

Consideration is given to the procedures to be followed in a program of aircraft engine development, production and utilization in which cost objectives are accorded the same importance as technical objectives. The practice of value analysis, which includes the identification and ordering of user requirements, the identification of functions to be provided and the prediction of production costs, is discussed and illustrated for the case of the cycle definition and scaling stage of engine airflow using the technique of mass estimation. The roles of studies of technical and technological progress, reliability and lifetimes, and maintenance requirements in engine development are considered, and measures which can be taken following the initial design stage to reduce life cycle costs are pointed out. Finally, organizational structures developed for the carrying out of engine programs with cost objectives are examined. A.L.W.

A81-24260 LCC versus confidence testing during long-term storage. G. Kasouf (General Electric Co., Arlington, Va.). In: Annual Reliability and Maintainability Symposium, Philadelphia, Pa., January 27-29, 1981, Proceedings. New York, Institute of Electrical and Electronics Engineers, Inc., 1981, p. 101-107. 8 refs.

The Life Cycle Cost (LCC) system is designed to minimize dormant storage-standby effects to achieve operational readiness with lowest maintenance, logistic, and procurements costs. The mathematical models use the 'approximation for simplification' method which defines logistic values as a function of reliability and maintainability functions. It is concluded that a properly applied LCC system can provide significant life-cycle cost benefits in confidence testing of weapons during long-term dormancy periods. A.T.

A81-24261 # The cost of test system requirements. D. Gleason (USAF, Rome Air Development Center, Griffiss AFB, N.Y.). In: Annual Reliability and Maintainability Symposium, Philadelphia, Pa., January 27-29, 1981, Proceedings. New York, Institute of Electrical and Electronics Engineers, Inc., 1981, p. 108-113.

Methodology was developed to enable the life cycle cost analyst to evaluate the effect of test system requirements on future expenditures for manpower and spares costs. The methodology combines the requirements for fault detection and isolation, and erroneous fault indications into a measure of overall test effectiveness denoted as ENR. The value of ENR is translatable into cost equations for manpower and spares for system support. The designer can use this method in a tradeoff of test system capabilities vs future operation and support cost elements. A.T.

A81-24270 # Contracting for Life Cycle Cost to improve system affordability. N. S. Bryan (U.S. Naval Material Command, Washington, D.C.). In: Annual Reliability and Maintainability Symposium, Philadelphia, Pa., January 27-29, 1981, Proceedings. New York, Institute of Electrical and Electronics Engineers, Inc., 1981, p. 342-345.

This paper addresses reliability and maintainability (R&M) from a Life Cycle Cost (LCC) perspective. Specifically it deals with the current policy on life cycle cost, approaches for incorporating LCC into source selection and contractual provisions, and lessons learned from Navy experiences in competitive awards where LCC has been a significant evaluation criterion. The paper investigates the dependence of LCC estimates on reliability and maintainability forecasts and assesses the work to be done in the future to closely align R&M and LCC disciplines. (Author)

A81-24271 Parametric cost methodology. A. S. Korkotides and K. T. Wallenius (Clemson University, Clemson, S.C.). In: Annual Reliability and Maintainability Symposium, Philadelphia, Pa., January 27-29, 1981, Proceedings. New York, Institute of Electrical and Electronics Engineers, Inc., 1981, p. 346-352. 18 refs. Contract No. N00014-75-C-0451.

The paper focuses on the role of analogy in empirical model construction. A measure of analogy between systems of the same

general type is proposed and its properties are discussed. A new criterion for variable selection based on this measure is examined, and a parametric cost estimation example is given. V.L.

A81-26690 * **Cost-effectiveness methodology for computer systems selection.** A. Vallone and K. S. Bajaj (Computer Sciences Corp., System Sciences Div., Silver Spring, Md.). In: *Asilomar Conference on Circuits, Systems, and Computers, 13th, Pacific Grove, Calif., November 5-7, 1979, Conference Record.*

Piscataway, N.J., Institute of Electrical and Electronics Engineers, Inc., 1980, p. 569-573. 10 refs. Contract No. NAS5-20640.

A new approach to the problem of selecting a computer system design has been developed. The purpose of this methodology is to identify a system design that is capable of fulfilling system objectives in the most economical way. The methodology characterizes each system design by the cost of the system life cycle and by the system's effectiveness in reaching objectives. Cost is measured by a 'system cost index' derived from an analysis of all expenditures and possible revenues over the system life cycle. Effectiveness is measured by a 'system utility index' obtained by combining the impact that each selection factor has on the system objectives and it is assessed through a 'utility curve'. A preestablished algorithm combines cost and utility and provides a ranking of the alternative system designs from which the 'best' design is selected. (Author)

A81-27107 **The economics of photovoltaics in the commercial, institutional, and industrial sectors.** A. J. Cox (MIT, Cambridge, Mass.). In: *Photovoltaic Specialists Conference, 14th, San Diego, Calif., January 7-10, 1980, Conference Record.*

New York, Institute of Electrical and Electronics Engineers, Inc., 1980, p. 252-258. 8 refs.

This paper describes the application of a model which computes system break-even capital costs, array break-even capital costs and profits from photovoltaic investments in the industrial, commercial and institutional sector. Several tax and accounting combinations are described and utilized in this paper. Results indicate that, at rates of return usually found in the industrial and commercial sectors, photovoltaic investments will not be attractive when the costs of those investments are based on the Department of Energy's cost goals for 1986. (Author)

A81-30296 # **Financial management of avionics and electronic systems.** R. W. Grimm. In: *NAECON 1980; Proceedings of the National Aerospace and Electronics Conference, Dayton, Ohio, May 20-22, 1980. Volume 2.* New York, Institute of Electrical and Electronics Engineers, Inc., 1980, p. 670-674.

Cost analysis methodology for avionics and electronic systems is discussed. Government methodology consists of four techniques: (1) parametric, (2) analogy, (3) engineering (build-up), and (4) historical data. Whereas government relies heavily on parametrics, industry generally uses industrial engineering estimates. Many methodologies incorporate all four methods. It is maintained that no reliable, consistent software technical and cost data base exists. This lack of credible data is a hindrance for cost analysts who look at potential applications in financial analysis, and the help of the Cost/Schedule Control System Criteria is limited. 85% of cost growth is due to requirements and specifications changes and 15% is due to poor cost estimation. D.K.

A81-31700 **Systems costing of hovercraft, hydrofoils and wing-in-ground effect machines. II.** J. M. L. Reeves and D. P. Findley. *High-Speed Surface Craft*, vol. 20, Apr. 1981, p. 30-35. 6 refs.

A review is presented of a universal work breakdown structure, developed in 1973 by the U.S. Navy and of an earlier, less detailed structure, the Bureau of Ships Consolidated Index (BSCI) paired with the Navy Standard Subject Identification Codes, both developed for the purpose of tracking a program/project from birth to death. The adaptation of these structures to advanced naval vehicles, and the operating and support cost structures of the Ship Work Breakdown Structure are discussed. The steps for developing a reliable cost estimate are defined, with attention being given to the types of historical data (resource, cost explanatory elements, and program) required. Four general types of costing methods, top down,

analogy, bottoms up, and opinion are described. The desirability of obtaining costs by the use of computer models is indicated. K.S.

A81-36874 **Space Telescope - System engineering management.** T. A. Facey (Perkin-Elmer Corp., Optical Technology Div., Danbury, Conn.). In: *Management of optics; Proceedings of the Seminar, Huntsville, Ala., October 1, 2, 1980.* Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers, 1981, p. 101-107.

A key systems engineering tool in the management of the Space Telescope is the use of error budget 'margins', or resource reserves, which are put aside and used subsequently either to lower cost or alleviate unforeseen problems. Most margins are used during the design process to act as a resource pool from which to draw in resolving unforeseen technical difficulties or in avoiding cost growth. These error budgets and their margins become the central element in the evolution of a sophisticated space optical system from concept to application. This paper illustrates this by examples drawn from Perkin-Elmer's recent experience with the Space Telescope. (Author)

A81-39281 **Financing U.S. energy development - An economist's perspective.** P. Navarro. *Energy Law Journal*, vol. 2, no. 1, 1981, p. 9-31. 130 refs.

Economic arguments are presented for the three financing options, related to private sector, government, and consumer. An examination is conducted concerning the major legal arguments set forth by the various proponents and opponents of the project, taking into account the relationship to the economic arguments. The question of the 'proper' role of regulation as a risk-spreading device is also explored. Attention is given to the policy implications of the U.S. Circuit Court of Appeals' resolution of the Great Plains case. This case is concerned with the proposed Great Plains Coal Gasification Project (GP), which is designed to produce high-Btu coal gas, utilizing the Lurgi and methanation processes. On December 8, 1980, the U.S. Circuit Court of Appeals overturned the Federal Energy Regulatory Administration's (FERC) approval of the GP financial package. FERC had made the precedent-setting attempt to force the gas customers of five major pipelines to finance the GP. G.R.

A81-43800 **Financial transactions between the electric utility and the solar photovoltaic system owner.** Z. A. Yamayee and J. Peschon (Systems Control, Inc., Palo Alto, CA). (*Institute of Electrical and Electronics Engineers, Winter Meeting, Atlanta, GA, Feb. 1-6, 1981.*) *IEEE Transactions on Power Apparatus and Systems*, vol. PAS-100, Aug. 1981, p. 3950-3957; Discussion, p. 3958. 17 refs.

Residential customers with surplus solar photovoltaic (SPV) energy in excess of their load have the option of either selling that energy or storing it in batteries and consuming it later. Their choice of the option depends on the financial transaction contract between such households and the electric utility. The buy-back ratio can be used to characterize the financial transactions between the utility and the SPV owner. This paper addresses the issue of buy-back ratio and its implications. It describes how the buy-back ratio is going to affect the transaction between the SPV owner and the utility. Many components that affect the buy-back ratio are discussed from the electric utility perspective. A range of buy-back ratio is determined from the utility point of view. (Author)

A81-48522 **Life cycle cost - A survey.** B. S. Dhillon (Ottawa, University, Ottawa, Canada). *Microelectronics and Reliability*, vol. 21, no. 4, 1981, p. 495-511. 164 refs.

An extensive list of references on life cycle costs and reliability improvement warranty is presented. The bibliography has been obtained from conference proceedings and journals, but some books and reports on life cycle cost are also included. The period covered is from late 1950's to 1980. K.S.

N81-11026# **Federal Aviation Administration, Atlantic City, N.J. Office of Systems Engineering Management.**

ATARS IMPLEMENTATION TRADEOFF

Robert W. Sittler and Karl Seiler, III. Jul. 1980 108 p. refs (AD-A089977; FAA-EM-80-10; AEM-200) Avail: NTIS

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HC A06/MF A01 CSCL 01/2

The study is a comparative analysis of the costs and benefits from competing distributed and centralized ATARS architectures. The current DABS/ATARS structure is a distributed one; a new architecture is postulated for deployment as a centralized ATARS system. Distributed and centralized ATARS are compared as to performance, cost, reliability, maintainability, vulnerability and growth potential. Performance and reliability are treated as constraints to be met equally by all architectures. Maintainability is included in cost. The cost analysis including cost sensitivities forms the bulk of the study. It is found that centralization of most sites is more costly than a distributed deployment and that the individual sites which contribute most to a cost advantage for centralization lie in high density terminal areas. A most significant finding is that centralized ATARS is inferior to distributed ATARS in vulnerability. The options are about equal in growth potential. GRA

N81-11902# Advisory Group for Aerospace Research and Development, Neuilly-Sur-Seine (France).

DESIGN TO COST AND LIFE CYCLE COST

Jul. 1980 333 p refs In ENGLISH and FRENCH Symp. held in Amsterdam, 19-22 May 1980
(AGARD-CP-289; ISBN-92-835-0268-X) Avail: NTIS HC A15/MF A01

Life cycle costs (LCC) methodology and its relation to specifications and requirements are discussed. Other topics include the impact of LCC analysis on total system design, cost control of operations and support, and LCC of subsystems and components. For individual titles, see N81-11903 through N81-11928.

N81-11903# British Aerospace Aircraft Group, Preston (England). **LIFE CYCLE COST ANALYSIS (LCCA) IN MILITARY AIRCRAFT PROCUREMENT**

R. Chisholm /In AGARD Design to Cost and Life Cycle Cost Jul. 1980 8 p refs
Avail: NTIS HC A15/MF A01

The changing economic environment and the developing requirement to put increased emphasis on downstream activities in the early phases of a weapon system program are discussed. A possible approach to calculating the magnitude and spread of cost reducing investments is considered and applications of life cycle cost analysis in strategic decision making, the design process, and as a sales aid are mentioned. E.D.K.

N81-11904# Naval Air Systems Command, Washington, D. C. **O AND S COST VISIBILITY IN EARLY DESIGN**

R. E. Houts /In AGARD Design to Cost and Life Cycle Cost Jul. 1980 12 p
Avail: NTIS HC A15/MF A01

Maintenance support costs and related cost data and techniques currently employed by the Naval Air Systems Command (NAVAIR) are discussed. The operating and support (O&S) cost definitions including the NAVAIR O&S cost breakdown structure, data bases, and cost estimating techniques that allow the analyst to employ engineering oriented cost analysis techniques in early design are presented. E.D.K.

N81-11905# Army Aviation Research and Development Command, St. Louis, Mo.

US ARMY DESIGN-TO-COST EXPERIENCE

Richard B. Lewis, II, Edward P. Laughlin, and Francis E. Spring /In AGARD Design to Cost and Life Cycle Cost Jul. 1980 11 p

Avail: NTIS HC A15/MF A01

Design-to-Cost procedures were included in all major U.S. Army aviation procurements since 1972. Experience was gained during design, development, procurement and initial fielding of several major systems. The ownership cost of this equipment is considered during development. Production and operational phases and techniques for cost control are discussed. Lessons learned as a result of joint Government-Industry Design-To-Unit-Production-Cost programs are presented. Techniques which were effective in cost management on utility and attack helicopters and turbine engine programs are listed. Producibility engineering planning, initial production tooling, and facilitization to reduce production costs are discussed. The role of warranties in controlling operating and support costs is illustrated. It is concluded that Design-To-Unit-Production-Cost techniques were effective in achieving lower production costs, but that additional work is

necessary to better control operating and support costs and thereby achieve optimal life cycle costs. E.D.K.

N81-11906# Advisory Group for Aerospace Research and Development, Neuilly-Sur-Seine (France).

A REVIEW AND ASSESSMENT OF SYSTEM COST REDUCTION ACTIVITIES

W. E. Lamar /In its Design to Cost and Life Cycle Cost Jul. 1980 38 p refs

Avail: NTIS HC A15/MF A01

A review of the evolution of cost reduction concepts over the past decade to current design to life cycle cost (DTLCC) efforts is presented. Emphasis is given to progress achieved and basic problems and issues which have confronted successful application of these concepts. The review addresses the importance of top management action, consideration of costs in the early phase, and a credible data base. Progress in developing cost prediction and analysis methods, technologies to reduce development, acquisition, operations and support costs, the institutionalization of design to cost and design to life cycle cost methods, and remaining challenges are discussed. E.D.K.

N81-11907# Boeing Aerospace Co., Seattle, Wash.

DESIGN TO LIFE CYCLE COST RESEARCH

Fred T. Carlson /In AGARD Design to Cost and Life Cycle Cost Jul. 1980 15 p

Avail: NTIS HC A15/MF A01

Design to life cycle cost research applied to the area of logistics systems is discussed with a look at history data for typical aircraft systems. Deficiencies in systems operations and support are identified and described. Methods of assessing the cost, risk, and program application are discussed. Areas of emphasis, cost drivers, and their impacts are shown. It is determined that many deficiencies in the ownership of systems do not relate to program plans. Resolution by future technology advances must be aimed toward elimination of manpower, material, and program causative factors through research of logistics subsystems, i.e., inspections, material distribution, people use, and logistics networks. E.D.K.

N81-11908# Dornier-Werke G.m.b.H., Friedrichshafen (West Germany).

IMPACT ON SYSTEM DESIGN OF COST ANALYSIS OF SPECIFICATIONS AND REQUIREMENTS

Horst Graiser /In AGARD Design to Cost and Life Cycle Cost Jul. 1980 10 p

Avail: NTIS HC A15/MF A01

Four categories of requirements are to be considered: (1) technical requirements; (2) operational requirements; (3) program-specific requirements; and (4) budget requirements. Their impact on cost is to be identified and quantified for each phase of a weapon system's life cycle. E.D.K.

N81-11909# British Aerospace Aircraft Group, Preston (England). **EVOLUTION OF TECHNIQUES FOR LCC ANALYSIS**

J. M. Jones /In AGARD Design to Cost and Life Cycle Cost Jul. 1980 13 p

Avail: NTIS HC A15/MF A01

The need to control aircraft operating and support costs starting with a coordinated approach to life cycle cost (LCC) analysis during the conceptual design stage is identified. Experiences in the development and use of LCC models are discussed. The limitations of existing systems together with examples of current work on this subject are presented. E.D.K.

N81-11910# McDonnell Aircraft Co., St. Louis, Mo.

THE HORNET PROGRAM: A DESIGN TO LIFE CYCLE COST CASE STUDY

Robert D. Dighton /In AGARD Design to Cost and Life Cycle Cost Jul. 1980 12 p

Avail: NTIS HC A15/MF A01

A primary requirement of the Hornet program is significant reduction in life cycle cost (LCC). The design and management techniques used to develop a new fighter/attack system at an affordable LCC are described. The designer must consider key elements of LCC such as reliability, maintainability, unit production cost, and logistics support cost elements in parallel with traditional concerns of weight and performance when designing life cycle costs. Examples of trade studies resulting in relatively large LCC avoidances are summarized. E.D.K.

N81-11911# General Dynamics/Fort Worth, Tex. F-16 Systems Engineering Management.

DESIGN TO COST AND THE F-16 MULTIROLE FIGHTER
W. M. Rowell /In AGARD Design to Cost and Life Cycle Cost
Jul. 1980 14 p refs

Avail: NTIS HC A15/MF A01

The low cost of the F-16 Fighter Aircraft is the result of a selected balance of innovative technologies, available low cost material and equipment, and cost reducing configuration options. This was implemented through the application of design to cost concepts from the beginning of the program. The F-16 full scale development contract contained several clauses which provided downstream cost control including control of both acquisition and operations. A key part of this plan was the identification and close tracking of a few cost drivers which comprise over 50% of the air vehicle cost. A number of specific contract provisions are aimed at control of operating and support costs. These provisions provide financial incentives and penalties for consideration of reliability and other logistic support parameters. Other control provisions require cost considerations in trade studies, engineering change proposals, and in vendor selections. E.D.K.

N81-11912# Messerschmitt-Boelkow-Blohm G.m.b.H., Munich (West Germany). Aircraft Div.

STRUCTURAL INTEGRATION AS A MEANS OF COST REDUCTION

P. E. Siebert /In AGARD Design to Cost and Life Cycle Cost
Jul. 1980 17 p

Avail: NTIS HC A15/MF A01

Through some components of the Tornado fighter aircraft it is demonstrated how costs can be reduced by structural integration. The components are two flat panels, the wing carry through box and the Taileron. Cost savings could be achieved from 15% to a maximum of 68%. E.D.K.

N81-11913# Avions Marcel Dassault, Saint-Cloud (France).
DESIGN-TO-COST AND NEW TECHNOLOGIES [DESIGN-TO-COST ET TECHNOLOGIES NOUVELLES]

Francois Cordie /In AGARD Design to Cost and Life Cycle Cost
Jul. 1980 8 p In FRENCH

Avail: NTIS HC A15/MF A01

Modern combat aircraft design can no longer be undertaken without giving equal consideration to mission cost and performance when making compromises which lead to the choice of an aircraft formula. These compromises are based on technologies which can be used from the beginning of production. Usually they are new technologies which have passed the laboratory stage and applied to existing aircraft before being integrated into the design on a large scale. With respect to structures, carbon-epoxy composite technology is one of the most remarkable. Its introduction at the design stage results in reduction of mass and cost, first on the elements to which it is applied, and then by the amplifying effect on the assembly of the structure and the rest of the aircraft: engine, equipment, and fuel. Such a process supposes that the technology to be applied has attained a degree of maturation which permits prediction of performance and cost with certitude. Transl. by A.R.H.

N81-11914# Societe Nationale Industrielle Aerospatiale, Paris (France). Aircraft Div.

ORGANIZING A DESIGN-TO-COST PROGRAM

Robert Tassinari /In AGARD Design to Cost and Life Cycle Cost
Jul. 1980 14 p

Avail: NTIS HC A15/MF A01

Total cost control at all development and production stages is a prerequisite to any significant design-to-cost (DTC) program. Design to life cycle cost (DTLCC) methods further require intimate knowledge of operational and maintenance costs. Specialists in this cost management method are aware of these two principles. Less obvious, perhaps are the great advantages to be derived through an organization specifically trained in the application of DTC and DTLC principles. A specialized organization and methods for integrating costs into all phases of new programs was created much in the way that weights were calculated into programs in the past. To keep pace with this reorganization in development, emphasis was placed on training personnel in value analysis and DTC methods. Results of these efforts first became apparent in 1977, during development of the A 200. Today,

the same principles are being applied in development of the A 310. E.D.K.

N81-11915# American Airlines, Inc., Tulsa, Okla.

A NEW METHOD FOR ESTIMATING TRANSPORT AIRCRAFT DIRECT OPERATING COSTS

Keith Grayson /In AGARD Design to Cost and Life Cycle Cost
Jul. 1980 20 p refs

Avail: NTIS HC A15/MF A01

A means of estimating aircraft direct operating costs for comparative purposes was developed which was able to recognize and include the potential benefits to be gained from technology and design innovation when applied to commercial transport aircraft. The work performed on this subject is reviewed. The validity of the developed methods and how they can be used in the evaluation of aircraft for an airline's fleet is also demonstrated. E.D.K.

N81-11916# Societe Nationale Industrielle Aerospatiale, Marignane (France.)

DESIGN-TO-COST APPLIED TO THE AS350 HELICOPTER [LE DESIGN TO COST APPLIQUE A L'HELICOPTERE AS350]

Rene Mouille /In AGARD Design to Cost and Life Cycle Cost
Jul. 1980 18 p In FRENCH

Avail: NTIS HC A15/MF A01

In order to remain competitive on the international market, cost reduction studies were undertaken at Aerospatiale and were concretized in the design of the AS350 helicopter after two years' effort by a small experimental research group. The development of this helicopter, which is definitely more economical than the Alouette 2 or the Gazelle, has followed the same cost reduction spirit as was used in its design. The method is classic and is based on (1) analysis of the value of functions and of the parts assuring these functions; (2) criticism of the solution; (3) search for new solutions; and (4) choice of compromises. The experience of the participants permitted rapid elimination of the most expensive choice as well as those with least performance. The benefits to be obtained from proceeding correctly from the design stage can be very important with regards to both acquisition and utilization costs. This is of interest to both civil and military users. Transl. by A.R.H.

N81-11918# British Aerospace Aircraft Group, Preston (England).
SOME ENGINEERING ASPECTS OF LIFE CYCLE COSTING

G. W. Bleasdale /In AGARD Design to Cost and Life Cycle Cost
Jul. 1980 9 p refs

Avail: NTIS HC A15/MF A01

The constituents that are common to most life cycle cost methods are identified. Ways in which some of the engineering costs can be minimized are discussed. It is shown that the extra cost of better engineering design may increase the acquisition cost but this will be more than offset by the large reduction in support costs complemented by the increase in reliability and aircraft availability. Examples are given showing typical contributions to high support costs of mechanical components. R.C.T.

N81-11919# Northrop Corp., Hawthorne, Calif. Aircraft Group.

BALANCED DESIGN: MINIMUM COST SOLUTION

E. Huie and H. F. Harris /In AGARD Design to Cost and Life Cycle Cost
Jul. 1980 8 p

Avail: NTIS HC A15/MF A01

The application of life cycle cost analysis is discussed and the techniques used to assessed life cycle costs during the different phases of weapon system development are described. An illustrative case study showing the benefits of the application of life cycle costing on availability, sustained sorties, and requirements are presented. R.C.T.

N81-11920# Industrieanlagen-Betriebsgesellschaft m.b.H., Ottobrunn (West Germany).

DESIGN TO COST AND SYSTEMS, LCC

Klaus Wickel /In AGARD Design to Cost and Life Cycle Cost
Jul. 1980 9 p

07 ECONOMIC FACTORS

Avail: NTIS HC A15/MF A01

Different aspects of the design to costs approach are addressed with special attention given to their operational and maintenance cost and methodological implications. Three major subtasks of the design to cost task are examined: design to financial feasibility; design to personnel feasibility; and design to system's life cycle costs. It is shown that design to cost is indisputably an absolutely essential approach to tackling the cost problems as long as the objective does not degenerate to mere design to financial feasibility. R.C.T.

N81-11922# Vereinigte Flugtechnische Werke G.m.b.H., Bremen (West Germany).

ESTIMATION OF RELATIVE TOTAL COST FOR AIRCRAFT SYSTEMS

J. Bollmann and H. Lankenau /In AGARD Design to Cost and Life Cycle Cost Jul. 1980 9 p refs

Avail: NTIS HC A15/MF A01

A suitable method for determining the relative total costs (fixed and operating costs) is described. It is shown that during the operating phase a clear statistical comparison must continuously be accomplished between the target and the actual values in order to ensure that any deviations and the causes of such deviations can be detected and eliminated. The need to have an agreed procedure between operator, aircraft manufacturer and equipment supplier is emphasized. R.C.T.

N81-11923# Messier-Hispano-Bugatti S.A., Montrouge (France). **USING COST REDUCTION CONCEPTS AT MESSIER-HISPANO-BUGATTI [MISE EN OEUVRE DES CONCEPTS DE REDUCTION DES COUTS CHEZ MESSIER-HISPANO-BUGATTI]**

M. Eslinger /In AGARD Design to Cost and Life Cycle Cost Jul. 1980 11 p In FRENCH

Avail: NTIS HC A15/MF A01

Industrialization, value analysis, production cost objective, and life cycle cost objective are four concepts used at M-H-B to reduce the cost of products such as landing gear, hydraulic equipment, wheels, and brakes. Each of these concepts is examined, and the means necessary for their implementation are indicated. Results of using these techniques are described.

Transl. by A.R.H.

N81-11924# Gabelman (Irving J.) Technical Associates, Rome, N.Y.

SUMMARY OF AGARD LECTURE SERIES 100: METHODOLOGY FOR CONTROL OF LIFE CYCLE COSTS FOR AVIONICS SYSTEMS

Irving J. Gabelman /In AGARD Design to Cost and Life Cycle Cost Jul. 1980 8 p Lecture held in Bonn, 7-8 May 1979 and in Athens, 10-11 May 1979

Avail: NTIS HC A15/MF A01

The continually increasing cost of avionics and weapons systems between acquisition and their lifetime operation are discussed. Specific emphasis is given to the following: elements of life cycle costs; parametric cost analysis; and life cycle cost methodology. R.C.T.

N81-11925# Marconi Avionics Ltd., Rochester (England). **DESIGN TO COST VIEWED AGAINST THE ACHIEVEMENT OF OPTIMUM SYSTEM CAPABILITY**

R. G. Rose /In AGARD Design to Cost and Life Cycle Cost Jul. 1980 6 p

Avail: NTIS HC A15/MF A01

The criteria for defining the cost of avionics systems are discussed. Two types of costs are specifically described: one time costs and recurring costs. One time costs include design and development, manufacture, training, documentation and facilities. Recurring costs include retraining where necessary, post design improvement studies, operating and maintenance costs and transportation and handling. These two groups are interactive in as much as poor design usually results in heavy maintenance costs and design for the reduction of operating and maintenance costs will usually result in higher design and development costs for the achievement of the results required. There is another point in product design that must be considered as part of assets management, and that is the required availability or state of readiness of the equipment to perform the tasks for which it was developed. R.C.T.

N81-11926# Ministry of Defence, London (England).

SUMMARY OF AGARD LECTURE SERIES 107: THE APPLICATION OF DESIGN TO COST AND LIFE CYCLE COST TO AIRCRAFT ENGINES

E. J. Jones /In AGARD Design to Cost and Life Cycle Cost Jul. 1980 5 p Lecture held in Saint Louis, France 12-13 May 1980 and in London, 15-16 May 1980

Avail: NTIS HC A15/MF A01

The latest methodologies of cost/performance comparison and trade offs for aircraft engines are examined. Information includes data collection, analysis, modelling and estimating all development and operations costs. R.C.T.

N81-11927# Air Force Wright Aeronautical Labs., Wright-Patterson AFB, Ohio. Aero Propulsion Lab.

THE ROLE OF ADVANCED TECHNOLOGY OF TURBINE ENGINE LIFE CYCLE COST

Robert F. Panella, Michael A. Barga, and Richard G. McNally /In AGARD Design to Cost and Life Cycle Cost Jul. 1980 13 p refs

Avail: NTIS HC A15/MF A01

The advanced technology of the turbine engine and its impact on life cycle costs (LCC) is addressed. To adequately assess this advanced technology, LCC techniques are to be developed which are sensitive to performance, structural design, manufacturing processes, reliability and maintainability. These techniques are then used to determine the performance/life/cost trade-offs of the advanced technology. An overview of current efforts in LCC techniques, and trade-offs is given. R.C.T.

N81-11928# Lucas Aerospace Ltd., Birmingham (England). Engine Management Div.

COST CONSIDERATIONS OF ENGINE FUEL CONTROL SYSTEMS

A. J. Eccleston /In AGARD Design to Cost and Life Cycle Cost Jul. 1980 14 p

Avail: NTIS HC A15/MF A01

The manufacture of hydromechanical systems is discussed. It is shown that by applying well tried principles a value engineering team can identify considerable potential savings, particularly in the case of new designs. While lower life cycle costs are frequently only achieved at the expense of increased first cost this is not invariably so. R.C.T.

N81-12009*# Jackson State Univ., Miss.

PAYLOAD MAINTENANCE COST MODEL FOR THE SPACE TELESCOPE

William L. White /In Alabama Univ. Res. Rept.: The 1980 NASA/ASEE Summer Fac. Fellowship Program Oct. 1980 15 p refs

Avail: NTIS HC A99/MF A01 CSCL 03A

An optimum maintenance cost model for the space telescope for a fifteen year mission cycle was developed. Various documents and subsequent updates of failure rates and configurations were made. The reliability of the space telescope for one year, two and one half years, and five years were determined using the failure rates and configurations. The failure rates and configurations were also used in the maintenance simulation computer model which simulate the failure patterns for the fifteen year mission life of the space telescope. Cost algorithms associated with the maintenance options as indicated by the failure patterns were developed and integrated into the model. R.C.T.

N81-12612# Brookhaven National Lab., Upton, N. Y. Economic Analysis Div.

A STRATEGIC COST-BENEFIT ANALYSIS OF ENERGY POLICIES: OVERVIEW

Harry Davitian, Richard J. Goettle, IV (Jorgenson (Dale W.) Associates), Paul J. Groncki, Edward A. Hudson (Jorgenson (Dale W.) Associates), Peter Kleeman, and Joan Lukachinski Oct. 1979 24 p refs

(Contract DE-AC02-76CH-00016)

(BNL-51105) Avail: NTIS HC A02/MF A01

Three possible energy strategies are described and each is analyzed in terms of its economic, environmental, and national security benefits and costs. Each strategy is represented by a specific policy. The results indicate that conservation can substantially reduce import dependence and slow the growth of energy demand, with only a small macroeconomic cost and with

substantial benefits; the synfuels policy reduces imports by a smaller amount, does not reduce the growth in energy demand, involves substantial environmental costs and slows the rate of economic growth. These relationships could be different if the energy savings per unit cost for conservation are less than anticipated, or if the costs of synthetic fuels can be significantly lowered. A brief discussion of the motivation for the study, the assumptions and methodologies employed, the results, and the policy implication are presented. E.D.K.

N81-12936# Naval Data Automation Command, Washington, D.C.

ECONOMIC ANALYSIS PROCEDURES FOR ADP

Denise C. Zimmerman Mar. 1980 201 p refs

(AD-A089826; NAVDAC-PUB-15) Avail: NTIS
HC A10/MF A01 CSCL 05/3

Every manager devotes considerable time and effort to planning for the future, and every plan is concerned primarily with allocating scarce resources. This book explains a process which will aid the manager in making resource allocation decisions. This method of approaching a complex problem of choice is called Economic Analysis. Economic Analysis concerns the basic problem of economic choice (value received for value sacrificed) and as such, is applied by each of us implicitly and informally whenever we make a decision in the marketplace. For example, when we buy a car we do not take the first one we see. We look around until we find a model that suits our needs and our pocketbooks. In effect, we make an economic analysis, even if we don't call it that. This book was written in order to establish a procedural routine for personnel who have little or no experience with economic analyses. It will also be of value to those supervisors and functional managers who must initiate or review economic analyses. While the technique described throughout the book can be easily applied to all types of investment problems, the scope of this book is limited to economic problems of choice within the ADP arena. GRA

N81-15899 Columbia Univ., New York.

THE IMPACT OF ECONOMIC CONCENTRATION ON TECHNOLOGICAL PROGRESS Ph.D. Thesis

Ellen Susanna Cahn 1980 136 p

Avail: Univ. Microfilms Order No. 8028775

The contributions to technological progress made by private firms were investigated. Time series data for each of five industry groups were tested. For each industry, several measures of technological change were regressed on a set of independent variables with suggested influences on technological change. The selection of independent variables was based on three fundamental hypotheses; technological change may be related to cost pressure; investment in new technology may be directly related to a secure financial position, giving the expectation of a positive correlation with technological change; and market power may influence technological change. The results indicate that where concentration influences technological change, the effect is to impede it. It seems that innovative technology is used as a competitive strategy that is a response to competitive market conditions. T.M.

N81-16085*# National Aeronautics and Space Administration, Lyndon B. Johnson Space Center, Houston, Tex.

SOLAR POWER SATELLITE COST ESTIMATE

Ronald J. Harron and Richard C. Wadle Jan. 1981 169 p refs

(NASA-TM-58231; JSC-17053) Avail: NTIS
HC A08/MF A01 CSCL 22B

The solar power configuration costed is the 5 GW silicon solar cell reference system. The subsystems identified by work breakdown structure elements to the lowest level for which cost information was generated. This breakdown divides into five sections: the satellite, construction, transportation, the ground receiving station and maintenance. For each work breakdown structure element, a definition, design description and cost estimate were included. An effort was made to include for each element a reference that more thoroughly describes the element and the method of costing used. All costs are in 1977 dollars. T.M.

N81-16087# Aerospace Corp., El Segundo, Calif. Programs Group.

COST ESTIMATING PROCEDURE FOR UNMANNED

SATELLITES Final Report

H. Greer and H. G. Campbell Nov. 1980 20 p

(Contract F04701-80-C-0081)

(AD-A092458; TR-0081(6910)-1)

Avail: NTIS

HC A02/MF A01 CSCL 22/2

Historical costs from 11 unmanned satellite programs were analyzed. From these data, total satellite cost estimating relationships (CERs) were developed for use during preliminary design studies. A time-related factor, which it is believed accounts for differences in technology, was observed in the data. Stratification of the data by type of payload was also found to be necessary. Cost differences that stem from production quantity variations were accounted for by adjustment factors developed from standard learning curve theory. An example to illustrate use of the CERs is provided. GRA

N81-17831*# Booz-Allen Applied Research, Inc., Bethesda, Md.

STUDY OF CIVIL MARKETS FOR HEAVY-LIFT AIRSHIPS

Peter Mettam, Dagfinn Hansen, Charles Chabot, and Robert Byrne Dec. 1978 390 p refs

(Contract NAS2-9826)

(NASA-CR-152202) Avail: NTIS HC A17/MF A01 CSCL 12B

The civil markets for heavy lift airships (HLAs) were defined by first identifying areas of most likely application. The operational suitability of HLAs for the applications identified were then assessed. The operating economics of HLAs were established and the market size for HLA services estimated by comparing HLA operating and economic characteristics with those of competing modes. The sensitivities of the market size to HLA characteristics were evaluated and the number and sizes of the vehicles required to service the more promising markets were defined. Important characteristics for future HLAs are discussed that were derived from the study of each application, including operational requirements, features enhancing profitability, military compatibility, improved design requirements, approach to entry into service, and institutional implications for design and operation. T.M.

N81-18217*# BDM Corp., Huntsville, Ala.

COAL GASIFICATION SYSTEMS ENGINEERING AND ANALYSIS. APPENDIX D: COST AND ECONOMIC STUDIES Final Report

31 Dec. 1980 636 p 10 Vol.

(Contract NAS8-33824)

(NASA-CR-161658; BDM/H-80-800-TR-App-D) Avail: NTIS
HC A99/MF A01 CSCL 21D

The detailed cost estimate documentation for the designs prepared in this study are presented. The include: (1) Koppers-Totzek, (2) Texaco (3) Babcock and Wilcox, (4) BGC-Lurgi, and (5) Lurgi. The alternate product cost estimates include: (1) Koppers-Totzek and Texaco single product facilities (methane, methanol, gasoline, hydrogen), (2) Koppers-Totzek SNG and MBG, (3) Koppers-Totzek and Texaco SNG and MBG, and (4) Lurgi-methane and Lurgi-methane and methanol. E.D.K.

N81-18218*# BDM Corp., Huntsville, Ala.

COAL GASIFICATION SYSTEMS ENGINEERING AND ANALYSIS. APPENDIX E: COST ESTIMATION AND ECONOMIC EVALUATION METHODOLOGY Final Report

31 Dec. 1980 71 p refs 10 Vol.

(Contract NAS8-33824)

(NASA-CR-161659; BDM/H-80-800-TR-App-E) Avail: NTIS
HC A04/MF A01 CSCL 21D

The cost estimation and economic evaluation methodologies presented are consistent with industry practice for assessing capital investment requirements and operating costs of coal conversion systems. All values stated are based on January, 1980 dollars with appropriate recognition of the time value of money. Evaluation of project economic feasibility can be considered a two step process (subject to considerable refinement). First, the costs of the project must be quantified and second, the price at which the product can be manufactured must be determined. These two major categories are discussed. The summary of methodology is divided into five parts: (1) systems costs, (2) instant plant costs, (3) annual operating costs, (4) escalation and discounting process, and (5) product pricing. E.D.K.

N81-18934*# National Aeronautics and Space Administration, Washington, D. C.

THE PLACE OF SPACE TECHNOLOGY IN ECONOMIC

07 ECONOMIC FACTORS

DEVELOPMENT: REFLECTIONS ON PRESENT AND FUTURE ASPECTS

A. Lebeau and K. E. Reuter Dec. 1980 29 p refs Transl. into ENGLISH from "La Place Techniques Spatiales dans le Developpement Economique: Reflexion sur des Aspects Actuels et Futurs" Paris, 1980 p 28 Transl. by Kanner (Leo) Associates, Redwood City, Calif. Original doc. prep. by ESA, Paris (Contract NASw-3199) (NASA-TM-76446) Avail: NTIS HC A03/MF A01 CSCL 05A

The effects of the development of satellite applications on the orientation of the space effort were examined. The gap between available and exploited technology, the impact of the current economic climate and future trends are discussed. Europe's low level of public funding for its space effort, in comparison to other space powers, and the dangers of complacency regarding Europe's competitiveness in the space market are illustrated. A proposal for the general direction which Europe's future strategy must take if European independence in this field is to be preserved is presented. T.M.

N81-18963# Industrial Technology Research and Development Foundation, Inc., Durant, Okla. UNIVERSITY BUSINESS ASSISTANCE CENTER OF OKLAHOMA Final Report

Oct. 1980 115 p refs Prepared in cooperation with Spearhead Associates, Inc., Muskogee, Okla. (Grant EDA-08-06-02117) (PB81-109522; EDA-80-0152) Avail: NTIS HC A06 A01 CSCL 05A

The Industrial Technology Research and Development Foundation, Inc. (ITRAD) was established in to address technology innovation transfer and commercialization as a means of accelerating the industrial innovation process. The objective of ITRAD is to make technical expertise and financial assistance available, in approved situations, to small and minority technology based firms for the development and commercialization of new products and processes. The stimulation of new product development and commercialization would create jobs in manufacturing sales, services, and thereby contributing to a healthier economy for the State and region. The ITRAD innovation Center and its method of operations is defined. GRA

N81-18990*# Jet Propulsion Lab., California Inst. of Tech., Pasadena DEEP SPACE NETWORK SOFTWARE COST ESTIMATION MODEL

R. C. Tausworthe /n its The Telecommun. and Data Acquisition 15 Feb. 1981 p 39-57 refs

Avail: NTIS HC A09/MF A01 CSCL 09B

A parametric software cost estimation model prepared for Deep Space Network (DSN) Data Systems implementation tasks is presented. The resource estimation model incorporates principles and data from a number of existing models. The model calibrates task magnitude and difficulty, development environment, and software technology effects through prompted responses to a set of approximately 50 questions. Parameters in the model are adjusted to fit DSN software life cycle statistics. The estimation model output scales a standard DSN Work Breakdown Structure skeleton, which is then input into a PERT/CPM system, producing a detailed schedule and resource budget for the project being planned. J.M.S.

N81-19641# National Bureau of Standards, Washington, D.C. LIFE-CYCLE COST MANUAL FOR THE FEDERAL ENERGY MANAGEMENT PROGRAM Final Report

Rosalie T. Ruegg Dec. 1980 240 p refs Sponsored in part by DOE (PB81-136269; NBS-HB-135) Avail: NTIS HC A11/MF A01 CSCL 05C

The manual is a guide to understanding the life cycle costing method and an aid to calculating the measures required for evaluating energy conservation and renewable energy investments in all Federal buildings. It expands upon life cycle costing criteria contained in the Program Rules of the Federal Energy Management Program (Subpart A of Part 436, Title 10, U.S. Code of Federal Regulations) and is consistent with those criteria. Its purpose is to facilitate the implementation of the Program Rules by explaining the life cycle costing method defining the measures, describing the assumptions and procedures to follow in performing evaluations, and giving examples. GRA

N81-21952*# National Aeronautics and Space Administration, Langley Research Center, Hampton, Va.

MARKETING INFORMATION: THE TECHNICAL REPORT AS PRODUCT

Freda F. Stohrer (Old Dominion Univ.) and Thomas E. Pinelli /n its Tech. Writing: Past, Present and Future Mar. 1981 p 5-16 refs

Avail: NTIS HC A04/MF A01 CSCL 05B

The present environment of the technical report is vast, with considerable variance in report components, format, and organization. As part of the Langley Scientific and Technical Information (STI) Review and Evaluation Project, a review of the technical report as an effective product for information communication was undertaken. Style manuals describing theory and practice in technical report preparation; publication manuals covering such factors as design, layout, and type style; and copies of technical reports were obtained from industrial, academic, governmental, and research organizations. T.M.

N81-21969# New York Univ., N. Y. MANUAL OF PRICING AND COST DETERMINATION OF ORGANIZATIONS ENGAGED IN DISSEMINATION OF KNOWLEDGE

William J. Baumol, Yale M. Branunstein, Dietrich M. Fisher, and Janusz A. Ordover 1980 115 p refs (Grant NSF DSI-74-12785)

(PB81-131856) Avail: NTIS HC A06/MF A01 CSCL 05B

The four major topics of investigation were the structure of supply and demand of information, the Federal Government as the producer and user of information experience in the packaging of information, and the role of technological change. The report examines problems in the production, dissemination and pricing of information, the structure of information industries, and other issues of interest to the information manager, the policy-maker, and researchers in the fields of economics and information science. GRA

N81-21972# Case Western Reserve Univ., Cleveland, Ohio. Dept. of Systems Engineering.

LEVELS OF OUTPUT RELATED TO COST OF OPERATION OF SCIENTIFIC AND TECHNICAL LIBRARIES, LORCOST, VOLUME 1 Final Report, Jan. 1978 - Jun. 1980

Paul B. Kantor Jun. 1980 110 p refs 3 Vol.

(Grant NSF DSI-77-17776)

(PB81-124703; PBK-80-1A-Vol-1)

Avail: NTIS

HC A06/MF A01 CSCL 05B

The economic relation between the cost of operating a scientific technical library and the output of that library on service to patrons was explored in the LORCOST Libraries Project. The project combines general descriptive considerations with the definition of new service measures and with detailed mathematical procedures. Descriptive and mathematical materials are presented, libraries, and economic modeling, are discussed. Details of the definition of a best fit, choice of models, and determination of parameters and their errors are covered. An investigation of the problem of pricing library services to maximum social benefit is also discussed. GRA

N81-21973# Case Western Reserve Univ., Cleveland, Ohio. Dept. of Systems Engineering.

LEVELS OF OUTPUT RELATED TO COST OF OPERATION OF SCIENTIFIC AND TECHNICAL LIBRARIES: LORCOST, VOLUME 2 Final Report

Judy B. Wood and Paul B. Kantor Jun. 1980 66 p 3 Vol.

(Grant NSF DSI-77-17776)

(PB81-124711; PBK-80-1B-Vol-2)

Avail: NTIS

HC A04/MF A01 CSCL 05B

The possibility of gathering quantitative data on the service rendered by scientific and technical libraries, integrating it into mathematical models of the cost benefit relation, and providing a base for estimation of national levels of activity was explored. Libraries are shown to obey a family of general laws, with economy of scale. Estimates are found of the relative cost of various types of service. The analysis is based upon data collected at and by seventy-three participating libraries, selected from a national frame of five thousand libraries. Detailed formulae, plots, and tables are presented. Several related topics in the availability of reference service and the pricing of library services were also examined. E.A.K.

N81-21974# Case Western Reserve Univ., Cleveland, Ohio. Dept. of Systems Engineering.

LEVELS OF OUTPUT RELATED TO COST OF OPERATION OF SCIENTIFIC AND TECHNICAL LIBRARIES, LORCOST, VOLUME 3 Final Report, Jan. 1978 - Jun. 1980

Linda Defendeifer and Paul B. Kantor Jun. 1980 192 p 3 Vol.

(Grant NSF DSI-77-17776)

(PB81-124729; PBK-80-1C-Vol-3)

Avail: NTIS

HC A09/MF A01 CSCL 05B

The relationship between services rendered and total operating budget for scientific and technical (Sci-Tech) libraries was studied. The models explored are black box models which do not trace the flow of dollars through the technical services area and to the interface with the clients or patrons of the library. The models are tested by applying them to a sample of approximately 70 Sci-Tech libraries, drawn from a national (U.S.A.) frame of approximately 5,000 such libraries. The frame presented was constructed through a complete scan of the 24,000 libraries summarized in the American Library Directory. E.A.K.

N81-22055* National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.

COMPONENT RESEARCH FOR FUTURE PROPULSION SYSTEMS

C. L. Walker, G. J. Weden, and J. Zuk 1981 16 p refs Presented at Fifty-seventh Specialists' Meeting, Toulouse, 11-14 May 1981; sponsored by AGARD Prepared in cooperation with NASA. Ames Research Center and Army Aviation Research and Development Command, Cleveland, Ohio

(NASA-TM-82613; AVRADCOM-TR-81-C-12) Avail: NTIS

HC A02/MF A01 CSCL 21E

Factors affecting the helicopter market are reviewed. The trade-offs involving acquisition cost, mission reliability, and life cycle cost are reviewed, including civil and military aspects. The potential for advanced vehicle configurations with substantial improvements in energy efficiency, operating economics, and characteristics to satisfy the demands of the future market are identified. Advanced propulsion systems required to support these vehicle configurations are discussed, as well as the component technology for the engine systems. Considerations for selection of components in areas of economics and efficiency are presented. S.F.

N81-23631* Sterling Hobe Corp., Washington, D.C.

MARKET STUDY FOR DIRECT UTILIZATION OF GEOTHERMAL RESOURCES BY SELECTED SECTORS OF ECONOMY

Aug. 1980 225 p

(Contract DE-AC01-80RA-50108)

(DOE/RA-50108/T1) Avail: NTIS HC A10/MF A01

A comprehensive analysis is presented of industrial markets potential for direct use of geothermal energy by a total of six industry sectors: food and kindred products; tobacco manufactures; textile mill products; lumber and wood products (except furniture); chemicals and allied products; and leather and leather products. Location determinants and potential for direct use of geothermal resources are presented. The data was gathered through interviews with 30 senior executives in the six sectors of economy selected for study. Probable locations of plants in geothermal resource areas and recommendations for geothermal resource marketing are presented. DOE

N81-23640* Rockwell International Corp., Canoga Park, Calif. Energy Systems Group.

FINANCIAL STUDY OF COMMERCIALIZATION OF SOLAR CENTRAL RECEIVER POWER SYSTEMS Final Report

Mar. 1981 104 p refs

(Contract DE-AC03-80SF-11421)

(DOE/SF-11421/1; ESG-80-38)

Avail: NTIS

HC A06/MF A01

Commercialization requires that central receiver (CR) systems meet the economic criteria used by industry to select systems for capital ventures. Quantitative estimates are given of the investment required by government, utilities, and the manufacturing sector to meet the energy displacement goals for central receiver technology. Initial solar repowering and stand-alone electric utility plants will not have economic comparability with competitive energy sources. A major factor for this is that initial (first of a kind) heliostat costs will be high. As heliostat costs are reduced due to automated manufacturing economies, learning, and high volume production, central receiver technology will become more competitive. Under this task, several scenarios (0.1, 0.5, and 1.0 quad/y) were evaluated to determine the

effect on commercial attractiveness and to determine the cost to government to bring about commercialization of solar central receivers. DOE

N81-23966* Clemson Univ., S.C. Dept. of Mathematical Sciences.

A COST FUNCTION FOR MILITARY AIRFRAMES

Norman K. Womer May 1980 12 p refs Presented at the 9th Ann. DOD/FAI Acquisition Res. Symp., Annapolis, 9-11 Jun. 1981

(Contract N00014-75-C-0451; NR Proj. 047-202)

(AD-A097538; N122) Avail: NTIS HC A02/MF A01 CSCL 12/1

Recent theoretical and empirical work in the areas of learning curves, production rate and cost estimation of airframes has seemed to yield contradictory conclusions. A model of acquisition process that captures the interaction between learning and both endogenous and exogenous production rate changes is developed by modifying a previous model to include production experience and yearly production targets. This permits a production program to be modeled as a series of discrete tasks connected by experience. The impacts of an exogenous increase or decrease in deliveries, of stretching a lot out over a longer period of time, and of several restrictions on production can be modeled by this procedure. Author (GRA)

N81-23967* Clemson Univ., S.C. Dept. of Mathematical Sciences.

A COST FUNCTION FOR AN AIRFRAME PRODUCTION PROGRAM

Norman K. Womer and Thomas R. Gullledge Aug. 1980 17 p refs

(Contract N00014-75-C-0451; NR Proj. 047-202)

(AD-A097540; N125) Avail: NTIS HC A02/MF A01 CSCL 12/1

This research represents the expansion of previous work in the area of estimating program cost in military airframe production. The effort is unique in that it yields a model of the production process that considers the impact of learning and production rate on total program costs. To provide an empirical test of model validity, the parameters are estimated for the C141 airframe program. The empirical work is instructive in that it shows how particular care must be taken in formulating models of this type. This model should be particularly useful as a prototype for models of on going production programs. In particular, it can be used to estimate the cost impact of exogenous changes in the program delivery schedule, the 'crashes' and 'stretch-outs' that frequently characterize military aircraft programs. Author (GRA)

N81-23970* Clemson Univ., S.C. Dept. of Mathematical Sciences.

SOME PROPOSITIONS ON COST FUNCTIONS

Norman K. Womer Jul. 1980 18 p refs

(Contract N00014-75-C-0451; NR Proj. 047-202)

(AD-A097539; N124) Avail: NTIS HC A02/MF A01 CSCL 12/1

In this paper, a model is developed for a firm producing to an order which specifies a quantity and a delivery date for output. The order serves to constrain a production program which minimizes the discounted cost of producing at a constant output rate. The model is formed by augmenting a homogeneous production function with a learning hypothesis and deriving a cost function. The cost function is then compared to several results due to Alchian, Hirshleifer, and Oi. GRA

N81-24081* General Electric Co., Cincinnati, Ohio. Aircraft Engine Business Group.

ENGINE LIFE DEVELOPMENT

Brian Brimelow In AGARD Turbine Engine Testing Jan. 1981 9 p ref

Avail: NTIS HC A21/MF A01

The various parameters effecting the rapid increase of operating and support costs of aircraft engine development are graphically illustrated. The range of conditions required for the aircraft to meet its mission requirements is defined. It is shown that failure to fully establish these requirements results in an inadequate test program followed by frequent engine/control removals because of adverse tolerances stack-ups of otherwise servicable components. It is further shown that given adequate definition of aircraft requirements, shop visits for operability problems can and should be targeted so that refurbishments

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can be carried out at the time when the engine is removed for replacement of a limited item. R.C.T.

N81-25862* National Aeronautics and Space Administration. Langley Research Center, Hampton, Va.

GUIDELINES FOR COST CONTROL AND ANALYSIS OF COST-TYPE RESEARCH AND DEVELOPMENT CONTRACTS

Charles W. Sibbers May 1981 71 p
(NASA-TM-83108) Avail: NTIS HC A04/MF A01 CSCL 05A

The cost information which should be obtained from a contractor(s) on a major, cost type research and development contract(s), and the analyses and effective use of these data are discussed. Specific type(s) of information which should be required, methods for analyzing such information, and methods for effectively using the results of such analyses to enhance NASA contract and project management are included. The material presented is based primarily on the principal methods which have been effectively used in the management of major cost type research and development contracts. J.M.S.

N81-26975* Mitre Corp., Bedford, Mass.

SEEK TALK FULL SCALE ENGINEERING DEVELOPMENT LIFE CYCLE COST (LCC) MODEL. VOLUME 1: LCC MANAGEMENT

Robert V. D. Campbell Hanscom AFB, Mass. Deputy for Communications and Information Systems Apr. 1981 24 p
(Contract F19628-81-C-0001)
(AD-A098976; MTR-8210-Vol-1; ESD-TR-81-122-Vol-1) Avail: NTIS HC A02/MF A01 CSCL 05/1

This document is a manual for the application of the computerized Life Cycle Cost (LCC) Model designed for the Full-Scale Engineering Development (FSED) Phase of the SEEK TALK Program. FSED contractors will use the model to perform cost estimates, identify cost drivers and make trade and other cost related analyses. The manual assists users in establishing input parameter values, making LCC calculations and utilizing results. It also describes how to prepare computer inputs and run the model in either the interactive or batch mode. Volume 1 is entitled Life Cycle Cost Management, and Volume 2, Model Equations and Model Operations. GRA

N81-26983* California Univ., Livermore. Lawrence Livermore Lab.

ROLE OF FINANCING IN THE MARKETABILITY OF CAPITAL INTENSIVE SOLAR TECHNOLOGIES FOR INDUSTRY

W. C. Dickinson 30 Dec. 1980 10 p refs Presented at 3d Ann. Systems Simulation, Economic Analysis/Solar Heating and Cooling Operational Results Conf., Reno, Nev., 27 Apr. 1981
(Contract W-7405-eng-48)
(UCRL-85327; CONF-810405-11) Avail: NTIS HC A02/MF A01

Three methods of financing large, capital-intensive, industrial solar systems are examined: conventional end-user financing; conventional lease financing; and the solar management company/limited partnership (SMC). The primary disadvantage of the first method is the large capital investment required of the end-user. The availability of investment capital is limited and other investment priorities are dominant. In the latter two methods the end-user is not required to provide any front-end capital. The SMC structure is attractive in that the end-user pays only for solar energy delivered to the process and is not required to operate and maintain the system. Certain types of initial government assistance are needed to make this financing technique feasible. DOE

N81-27976* National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.

HIGHLIGHTS OF NASA/DOE PHOTOVOLTAIC MARKET ASSESSMENT VISIT TO MOROCCO

9 Jun. 1981 11 p refs
(NASA-TM-82288) Avail: NTIS HC A02/MF A01 CSCL 05C

A broad range of agricultural, rural development, and other power applications in various regions of Morocco were examined to determine the potential market for photovoltaic products in Moroccan development. The primary focus of the study was the agriculture sector which accounts for approximately 17% of the

country's GNP. The country has a clear need for reliable remote power systems, but does not have the financial resources to invest in the relatively high capital cost PV equipment. A modest potential for PV use was identified in nonagricultural rural services, such as refrigerators for rural clinics and rural radio-telephones. The main potential for PV in Morocco in the next five years lies mainly in the telecommunications sector. Applications include rural TV sets, TV repeater stations, microwave relay stations, and railroad, marine, and airline signalling. Market size estimates were derived from development and expansion plans. At an average customer cost for complete installed systems from \$18/Wp to \$30/Wp the total potential market value is estimated in the range of \$6.6 to \$11 million over the 1981-1986 period. A.R.H.

N81-28785* TRW Defense and Space Systems Group, Redondo Beach, Calif.

AIRBORNE SYSTEMS SOFTWARE ACQUISITION ENGINEERING GUIDEBOOK FOR SOFTWARE COST ANALYSIS AND ESTIMATING Final Report

R. W. Wolverton Sep. 1980 173 p refs
(Contract F33657-76-C-0677; AF Proj. 2238)
(AD-A100215; TRW-30323-6012-TU-00; ASD-TR-80-5025) Avail: NTIS HC A08/MF A01 CSCL 09/2

This guidebook assists Air Force Program Office engineering and management personnel in costing embedded software for avionics applications. A methodology for cost reporting and avoiding the '90 percent complete' syndrome is presented. An annotated bibliography gives the author's personal view of source material relevant to avionics software costing using modern programming practices. Author (GRA)

N81-29023* Advisory Group for Aerospace Research and Development, Neuilly-Sur-Seine (France). Flight Mechanics Panel.

DESIGN TO COST AND LIFE CYCLE COST

William E. Lamar May 1981 30 p Report previously announced as N81-11902
(AGARD-AR-165; ISBN-92-835-1387-8) Avail: NTIS HC A03/MF A01

Summaries of the papers delivered at the symposium, an account of the closing round table discussion, and an extensive listing of conclusions and recommendations in the area of design to cost and life cycle costing are presented. The sessions covered: (1) life cycle methodology and its relation to relation to specifications and requirements; (2) impact of life cycle costs analyses on total system design; (3) cost control of operations and support; and (4) life cycle cost of subsystems and components. The papers delivered at each session are listed. A.R.H.

N81-29797* Sutron Corp., Fairfax, Va.

SURVEY AND MARKET FORECAST OF FLEXIBLE DISKS Final Report

W. Gene Dickamore and Ingrid K. Dampier Nov. 1980 110 p refs
(Contract NBS-79-SBCA-0141)
(PB81-171258; SCR-354-80-037B; NBS-GCR-80-306) Avail: NTIS HC A06/MF A01 CSCL 05C

The major components of a generic flexible disk system are described including the flexible disk cartridge, the drive, and the controller. The system parameters affecting information interchange within each component are identified. The parameters and associated values that should be considered in the design of a standard or family of standards for information interchange on the flexible disk cartridge are presented. The volume of expected units that would support the proposed standards, a cost/benefit analysis of the Federal portion of the volume that would be influenced by the standards, and a description of positive and negative effects the proposed standards may have on flexible disk technology and the associated market are addressed. GRA

N81-30830* California Univ., Livermore. Lawrence Livermore Lab. Dept. of Electronics Engineering.

COST JUSTIFICATION FOR AN INTERACTIVE COMPUTER-AIDED DESIGN DRAFTING/MANUFACTURING SYSTEM

F. J. Norton 23 Sep. 1980 23 p refs Presented at 6th Ann. ADUA Meeting, Denver, 30 Sep. - 3 Oct. 1980 Submitted for publication
(Contract W-7405-eng-48)
(UCRL-84966) Avail: NTIS HC A02/MF A01

Capital, expense, and benefits as related to interactive computer aided design drafting/manufacturing systems are

discussed and model calculations are included. An example is treated by the simple payback method and the more sophisticated methods of net present value (NPV) and internal rate of return (IRR). The NPV and IRR approaches include in the calculation the time value of money and provide a sounder foundation on which to base the purchase decision. It is hoped that an understanding of these techniques by technical personnel will make an optimum system purchase more likely. DOE

N81-31029# Societe Nationale Industrielle Aerospatiale, Paris (France).

ARIANE TODAY AND TOMORROW

Luc Guillard 1980 13 p Presented at French Aerospace Week, Jakarta, Indonesia, 8-12 Dec. 1980

(SNIAS-802-422-109) Avail: NTIS HC A02/MF A01

The six years (1974 to 1980) of the ARIANE program are reviewed. The failure of the second ARIANE launch due to combustion instability at a high frequency (above 2,000 Hz) on one of the first stage engines is described. Manufacturing tolerances for the injectors were adjusted and an acceptance test of each individual injector head established. The launch vehicle's characteristics and performance are reviewed by listing the first payloads allotted. The three stage launch system and SYLDA (the ARIANE dual launch system) are described. The future program for ARIANE is summarized, with higher performance due to increasing the specific impulse on the third stage and adding two solid boosters to the first stage. A payload mass of twice the present system, and a larger useful volume, are envisaged, thereby increasing the range of satellites launchable by ARIANE. Author (ESA)

N81-31182# Federal Aviation Administration, Washington, D.C. Office of Aviation Policy and Plans.

NAS AUTOMATION EQUIPMENT OPERATING COST ESTIMATES, FY 1978 - 1979

Jerry Collins Jun. 1981 92 p refs

(AD-A102023; FAA-AP0-81-6)

Avail: NTIS

HC A05/MF A01 CSCL 05/1

This report provides summary information related to the cost of maintenance and support of certain system elements of the National Airspace System. Specific equipments for which support costs were developed include the major automation equipments of the enroute and the terminal air traffic control systems. The reader is reminded that this study effort was initiated prior to the formal establishment of the Computer Replacement Program and that the equipment under consideration for replacement is only partially matched by the list of equipment addressed in the study. The information developed should prove useful, however, in evaluating equipment common to both sets. The equipments which are the basis for this report cost about \$137 million in support and maintenance during FY 1979. Of this total, about \$112 million (82%) was labor, \$9 million (6%) was material and \$16 million (12%) was services. Of the total \$112,218,000 of FAA labor AIRWAY FACILITIES cost \$78,947,000 (70%), AIR TRAFFIC software support was \$30,027,000 (27%) and other labor was \$3,244,000 (3%). Support of the Enroute equipments cost \$79,647,000 (58%) and Terminal equipments cost \$57,339,000 (42%). Author (GRA)

N81-31865# Illinois Inst. of Tech., Chicago.

THE COST EFFECTIVENESS OF MINICOMPUTERS VERSUS MAN FRAMES FOR STRUCTURAL ANALYSIS PROBLEMS, PART 1 Final Report, 1 Jun. 1980 - 31 Aug. 1981

Raphael T. Haftka and Anneliese K. vonMayrhauser 31 Aug. 1981 17 p refs

(Contract N00014-80-C-0364)

(AD-A102265) Avail: NTIS HC A02/MF A01 CSCL 09/2

A study of the cost effectiveness of minicomputers vs. main frames for structural analysis programs is described. It compares the performance of several finite element programs including SAP IV and SPAR. Most of the runs were performed with the Illinois Institute of Technology PRIME 400 minicomputer and the United Computing System UNIVAC 1100/81 main frame. Other computers were used selectively. The matrix of structural problems included beam, plate and shell problems and static, dynamic and nonlinear analysis. Author (GRA)

N81-31866# Illinois Inst. of Tech., Chicago.

COST/PERFORMANCE COMPARISONS FOR PROGRAMS ON DIFFERENT MACHINES, PART 2 Final Report, 1 Jun. 1980 - 31 Aug. 1981

Anneliese K. vonMayrhauser and Dennis E. Witte 31 Aug. 1981 22 p refs Presented at ECOMA-9 Copenhagen, 6-9 Oct. 1981

(Contract N00014-80-C-0364; NR Proj. 064-640)

(AD-A102266) Avail: NTIS HC A02/MF A01 CSCL 09/2

Due to a wide selection of machines with vastly different charging algorithms, the question arises 'which machine is the most cost-effective'. The program's behavior and the impact on charges on different machines need to be explored. Accuracy and correctness of the results and the system's reliability also need consideration. Human factors influence quality as well. A procedure and system is discussed which evaluates these factors and their relationship with each other. GRA

N81-32077# Midwest Research Inst., Golden, Colo. Solar Energy Research Inst.

TRANSFER OF INFORMATION FROM RESEARCHER TO CONSUMER: CHOOSING THE APPROPRIATE MEDIA

Dan Halacy May 1981 5 p refs Presented at the AS/ISES Special Interest Group on Energy and Environ. Inform. Conf., Denver, 11 May 1981

(Contracts DE-AC02-77CH-00178; EG-77-C-01-4042)

(SERI/TP-513-1193; CONF-810560-1) Avail: NTIS HC A02/MF A01

The diffusion of solar innovations is discussed. The objectivity, timeliness, comprehensiveness, and clarity of marketing and commercial messages are reviewed. DOE

N81-32081# National Aeronautics and Space Administration, Lewis Research Center, Cleveland, Ohio.

HIGHLIGHTS OF NASA/DOE PHOTOVOLTAICS MARKET ASSESSMENT VISIT TO COLOMBIA

[1981] 13 p

(NASA-TM-84011) Avail: NTIS HC A02/MF A01 CSCL 05C

A NASA/DOE sponsored photovoltaic market assessment team composed of representatives of NASA-Lewis Research Center, DHR, Inc., and Associates in Rural Development, Inc. recently conducted a month-long study in Colombia (June 28 - July 23). The team contacted government officials and private sector representatives in Bogota and Cali, and visited rural development and agricultural sites in the departments of Cundinamarca, Caldas, Valle, and Chada to determine the potential market for American photovoltaic products in the Colombia agricultural and rural sectors. L.F.M.

N81-33089# Federal Compiler Testing Center, Falls Church, Va. Software Development Office.

REVIEW AND ANALYSIS OF CONVERSION COST ESTIMATING TECHNIQUES Final Report

Apr. 1981 157 p refs

(PB81-207854; GSA/FCSC-80/001)

Avail: NTIS

HC A08/MF A01 CSCL 05A

A baseline for conversion estimates were established. The implicit assumptions, advantages and disadvantages of each cost estimating technique are explained so that conversion estimators are better informed. The baseline conversion tasks were described and the conversion cost estimating techniques, including the estimation of four sample conversions with each technique was assessed. The hybrid model for conversion cost estimating was presented. GRA

N81-33845# General Research Corp., Huntsville, Ala.

AN EVALUATION OF SOFTWARE COST ESTIMATING MODELS Final Technical Report, Sep. - Oct. 1979

Robert Thibodeau Griffiss AFB, N.Y. RADC Jun. 1981 262 p refs

(Contract F30602-79-C-0244; AF Proj. 5581)

(AD-A104226; GRC-CR-1-940)

Avail: NTIS

HC A12/MF A01 CSCL 09/2

Nine software cost estimating models are evaluated to determine if they satisfy Air force needs. The evaluation considers both the qualitative and quantitative aspects of the models' outputs. Air Force needs for cost estimates are established by the Major Weapon System Acquisition Process. Associated with the different development phases are five cost estimating situations. Decisions that are made early in the Acquisition Process require software cost information that includes the entire life cycle for complete software systems, subsequent decisions require more detailed cost information. Comparison of the outputs of

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the nine test models with the requirements established by the five cost estimating situations indicates that the models are able to satisfy only the needs of the earliest phase of the Acquisition Process. The models perform satisfactorily for the purpose of allocating funds for software acquisition, but they fail to support such needs as assessment of alternative designs, proposal evaluation, or project management. GRA

N81-34077 Royal Society, London (England). Scientific Information Committee.

A STUDY OF THE SCIENTIFIC INFORMATION SYSTEM IN THE UNITED KINGDOM

May 1981 44 p refs Sponsored by British Library Lending Div.

(BLL-BLRDR-5626; ISBN-0-85403-166-9) Avail: British Library Lending Div., Boston Spa, Engl.

Economic factors involved in the scientific publication (journals) and library chain are addressed. Specifically, the dependence of the scientific journals on the international library market for income and budget cuts within libraries forcing subscription cancellations based on the availability of loans and/or photocopies under inter-library cooperation schemes are considered. Recommendations and several courses of action to relieve the situation are discussed. J.M.S.

MANAGEMENT POLICIES

Includes planning, theories, philosophy, tradeoffs, and management by objectives.

A81-10772 MBO and R&D productivity - Revisiting the system's dynamics. W. A. Fischer and C. P. McLaughlin (North Carolina, University, Chapel Hill, N.C.). *IEEE Transactions on Engineering Management*, vol. EM-27, Nov. 1980, p. 103-108. 16 refs.

Knowledge-intensive organizations, including R&D, must rely on job design and motivational incentives for the majority of their efforts toward increasing productivity. Management-by-Objectives (MBO) is a popular technique which addresses both of these approaches. There is considerable debate, however, over just how desirable MBO systems are in R&D organizations. The study examines an earlier system dynamics simulation of MBO in an R&D setting performed by Pozniomek, Rice, and Anderson, and suggests an alternative approach to MBO which stresses the nonevaluative contributions an MBO system can make to the researcher. The results of applying this alternative approach to MBO to a simulated R&D setting results in a substantial increase in productivity and the maintenance of social harmony within the group. (Author)

A81-14093 # The Agency's industrial policy - Its principles and their implementation since 1975. G. Dondi (ESA, Industrial Policy Dept., Paris, France). *ESA Bulletin*, vol. 21, Feb. 1980, p. 76-83.

Consideration is given to the principles and application of the industrial policy of ESA. The evolution of industrial policy principles at the time of the creation of ESA in 1975 is outlined, with attention given to the resolution of conflicts between the aspects of fair return, technological development, industrial structure definition and implementation, improvement of competitiveness and the rationalization of infrastructure and services. The role of the Agency's industrial policy in the definition and implementation of European space programs is examined, with consideration of functional and operational Agency goals and guidelines for their implementation. The most important measures taken to date by ESA under the industrial policy principles are then summarized, including those under the principles maximum industrial utilization, efficient procurement methods, new procurement policy definition, the use of European products and launchers, an equitable contract distribution, balanced development of a European space industry, and the review of industrial capabilities and structures. Complexities in the assessment of policy results since 1975 are pointed out, and industrial problems of the future which have to be taken into account in future ESA programs are indicated. A.L.W.

A81-16577 Aircraft testing - The challenge of the 1980's. J. G. Wissler (U.S. Navy, Naval Air Test Center, Patuxent River, Md.). (Society of Experimental Test Pilots, Symposium, 24th, Beverly Hills, Calif., Sept. 24-27, 1980.) *Society of Experimental Test Pilots, Technical Review*, vol. 15, no. 2, 1980, p. 1-17.

It is suggested that the main trends of aircraft testing in the 1980s will be driven by unconventional hardware, a great increase in airborne systems software, and a far greater concern for productive investment. It is further suggested that the anticipated emphasis on systems technology and the economics of acquisition will have a profound impact on the aircraft test community. B.J.

A81-18068 Aviation assumptions in the eighties. D. E. Raphael (Transportation Research Board, Washington, D.C.; SRI International, Menlo Park, Calif.). In: International Air Transportation Conference, New Orleans, La., April 30-May 3, 1979, Proceedings. Volume 1. New York, American Society of Civil Engineers, 1979, p. 275-282.

Respondents to a comprehensive survey concerning the aviation industry are generally optimistic but watchful about the prospects for the growth in the 1980s. Identifying factors most likely to influence air transportation demand was a major purpose of the

October 1978 survey of 120 forecasters, planners, and researchers, who came from four different global regions and six different industry sectors. The survey results presented in this paper show changes in real air fares and real economic growth to be the respondent's chief bellwethers, followed closely by jet fuel availability and price, and government regulation. Also considered in the survey are modifiers that would be most disruptive to the industry; here, a prolonged OPEC embargo, a major recession, and further large cuts in air fare discounts topped the list. Base-line values for certain assumptions are also provided. Comparisons are made among respondents in different regions and industry sectors. (Author)

A81-18088 Airport/environs plan making - Managing the planning process. R. R. Platzek (Williams, Platzek and Mocine, Sausalito, Calif.) and R. H. Doyle (Peak, Marwick, Mitchell and Co., San Mateo, Calif.). In: International Air Transportation Conference, New Orleans, La., April 30-May 3, 1979, Proceedings. Volume 2. New York, American Society of Civil Engineers, 1979, p. 649-659.

Airport/environs planning should provide for the joint airport/environs institutional system, acceptable work program, adequate financing, public involvement, and a coordinated technical team. It was shown that a linear analytic approach to airport planning will involve only staff technicians who will recommend a final proposal; this is an in-house effort, which may make it possible to manage airport/environs planning even if the participants do not agree on the final selected plan. The cyclic or iterative method determines whether a consensus exists, and repeats the process through a number of cycles until the technicians, the public, and the decision-makers agree on one feasible plan. The cyclic approach is more applicable to situations involving low mutual thrust, requiring all participants to be familiar with all potential tradeoffs. A.T.

A81-18940 Ion source development at JAERI. Y. Ohara, Y. Arakawa, H. Horiike, M. Kawai, S. Matsuda, T. Ohga, Y. Okumura (Japan Atomic Energy Research Institute, Tokai, Ibaraki, Japan), M. Akiba, Y. Mizutani, and J. Sakuraba. In: Symposium on Engineering Problems of Fusion Research, 8th, San Francisco, Calif., November 13-16, 1979, Proceedings. Volume 1. Piscataway, N.J., Institute of Electrical and Electronics Engineers, Inc., 1979, p. 198-202. 10 refs.

Ion beams of 5 A at 70 keV were produced for 10 sec using a modified duoPIGatron source with a two-stage accelerator. The beam fraction and impurity content were measured by a mass analyzer; the source conditioning modes to reduce the impurity were also investigated. The back plate of the ion source was exposed to a high heat flux density of about 1 kW/sq cm by backstream electrons in the JT-60 neutral beam injector; the heat flux is additionally increased from the focusing of backstream electrons by the source magnetic field. Since the duoPIGatron or the bucket ion source may not be available for quasi-DC beam production due to the difficulty of removing such high heat flux density, an ion source with lambda-shaped electron beam dump in the arc chamber is proposed. A.T.

A81-18942 A 24-MW neutral-beam injector of 400-keV H⁰. J. H. Fink, G. W. Hamilton (California, University, Livermore, Calif.), and J. L. Erickson. In: Symposium on Engineering Problems of Fusion Research, 8th, San Francisco, Calif., November 13-16, 1979, Proceedings. Volume 1. Piscataway, N.J., Institute of Electrical and Electronics Engineers, Inc., 1979, p. 209-213. 17 refs. Contract No. W-7405-eng-48.

The paper examines engineering problems involved in the development of high-energy beam injectors for fusion reactors of the future. The problems examined include: the development of a continuous or almost continuous ion source, the development of a recirculating metal-vapor cell, computer code development, insulator coating development, and the development of arc suppression techniques for large systems. A conceptual design of a 24 MW 400 keV hydrogen-atom injector based upon double-charge exchange is presented. The injector is able to support the reactor for a year without shutdown and its arc is limited to 2 J between electrodes 160 keV apart. V.L.

A81-18949 Progress on Lawrence Livermore Laboratory's superconducting High-Field Test Facility. D. N. Cornish, H. L. Harrison, A. M. Jewell, R. L. Leber, A. R. Rosdahl, R. M. Scanlan, and J. P. Zbasnik (California, University, Livermore, Calif.). In:

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Symposium on Engineering Problems of Fusion Research, 8th, San Francisco, Calif., November 13-16, 1979, Proceedings. Volume 1. Piscataway, N.J., Institute of Electrical and Electronics Engineers, Inc., 1979, p. 245-248. Contract No. W-7405-eng-48.

A split pair of multifilamentary Nb3Sn conductor coils, inside a set of Nb-Ti background coils, is being built for use in the High-Field Test Facility (HFTF). The inside diameter of the Nb3Sn winding is 40 cm, the peak field is 12 T, and the nominal conductor current is 5 kA. The coils are being built as part of a high-field superconducting development program in which characterization of short samples is followed by demonstration in coils incorporating production lengths of conductor. The HFTF will also be used to study the characteristics of prototype conductors designed to meet the requirements of tokamak toroidal field coils having a maximum field of 12 T. These conductors will be tested one at a time, inserted in the form of small coils in the split between the Nb3Sn coils in the HFTF. (Author)

A81-18951 NbTi based conductors for use in 12 Tesla toroidal field coils. H. R. Segal, T. M. Hrycaj, Z. J. J. Stekly, T. A. de Winter, and K. Hemachalam (Magnetic Corporation of America, Waltham, Mass.). In: Symposium on Engineering Problems of Fusion Research, 8th, San Francisco, Calif., November 13-16, 1979, Proceedings. Volume 1. Piscataway, N.J., Institute of Electrical and Electronics Engineers, Inc., 1979, p. 255-259. 8 refs. Contract No. EY-76-C-03-0167-PA-38.

The feasibility of using NbTi based alloys for high field applications has been investigated. Results have shown that the useful range of alloys of NbTi and NbTiTa can easily be extended to 12 K range. In this paper the results of the conductor optimization of 5 NbTi based alloys are presented. These results have been used in the design of 12 Tesla toroidal field coils based on ETF design parameters. (Author)

A81-18955 Effect of Ta and Zr additions to Ti-Nb alloys on superconducting properties. T. Horiuchi, K. Matsumoto, and Y. Monju (Kobe Steel, Ltd., Asada Research Laboratory, Kobe, Japan). In: Symposium on Engineering Problems of Fusion Research, 8th, San Francisco, Calif., November 13-16, 1979, Proceedings. Volume 1. Piscataway, N.J., Institute of Electrical and Electronics Engineers, Inc., 1979, p. 274-277. 6 refs.

A81-22877 Systems engineering - Fundamental limits and future prospects. A. P. Sage (Virginia, University, Charlottesville, Va.). *IEEE, Proceedings*, vol. 69, Feb. 1981, p. 158-166. 8 refs.

Presently perceived fundamental limits in systems engineering are described along with contemporary and projected future efforts to reach, circumvent, or ameliorate the effects of these limits. To present an overall view of the many frontiers being explored and extended in the realm of systems, man and cybernetics, a set of twenty-five objectives for systems engineering in the 1980's is first described. This is followed by a summary description of systems engineering. The paper continues with a discussion of limits associated with modeling, human and behavioral factors, and utility and value measurement. It concludes with examples of how these limits affect the design of planning and decision support systems, and energy policy analysis using technology forecasting and assessment. (Author)

A81-24073 # On the temporal and spatial variability of the vernal change of upper atmospheric circulation. Iu. I. Portniagin, V. A. Diachenko, N. A. Makarov, I. A. Lysenko (Gosudarstvennyi Komitet SSSR po Gidrometeorologii i Kontroliu Prirodnoi Sredy, Institut Eksperimental'noi Meteorologii, Obninsk, USSR), K. M. Greisiger, and K. Sprenger (Observatorium für Ionosphärenforschung, Kühlungsborn, East Germany). *Zeitschrift für Meteorologie*, vol. 30, no. 6, 1980, p. 338-345. 24 refs.

Springtime variations of circulation in the lower thermosphere are studied on the basis of wind measurements made over a number of years in the 90-100 km height region over Central and Eastern Europe by ground-based methods. The time of springtime reversal of the zonal wind in the lower thermosphere varies from year to year, but seems to be correlated with the time of the corresponding reversal in the stratosphere occurring four weeks later, a result which possibly can be used for weather forecasting. Differences in springtime variations in different years and at different sites of

observation are explained by the migration of high and low pressure areas. B.J.

A81-24074 # Accuracy and evaluation of profile data on energy transfer (Genauigkeit und Auswertung von Profilmessungen zur Energieaustauschbestimmung). T. Foken and G. Skeib (Meteorologisches Hauptobservatorium, Potsdam, East Germany). *Zeitschrift für Meteorologie*, vol. 30, no. 6, 1980, p. 346-360. 16 refs. In German.

Using a special error simulation model, the effects of systematic errors (especially instrument errors) on the calculation of turbulent energy fluxes under neutral and unstable conditions are assessed. The results are summarized in nomograms. In addition, the errors caused by irregularities in the distribution of atmospheric parameters are estimated (internal boundary layers, inhomogeneous surfaces). There are uncertainties caused by the use of different universal functions. Finally, a general scheme for the analysis of profile data is proposed. (Author)

A81-24075 # The satisfaction of Reynolds conditions (Zur Frage der Gültigkeit der Reynoldsschen Postulate). K. Bernhardt (Berlin, Humboldt-Universität, Berlin, East Germany). *Zeitschrift für Meteorologie*, vol. 30, no. 6, 1980, p. 361-368. 24 refs. In German.

The theory of stationary stochastic processes is used to investigate the satisfaction of Reynolds conditions with regard to atmospheric turbulence; Reynolds averaging is considered as a special filtering process. It is shown that various conditions are satisfied to different degrees as a function of the response function of the filter. A distinction is made between satisfaction of conditions with regard to mathematical expectation and with regard to the individual realization of the stochastic process. B.J.

N81-12933# National Telecommunications and Information Administration, Washington, D.C.

THE FOUNDATIONS OF UNITED STATES INFORMATION POLICY

Arthur A. Bushkin and Jane H. Yurow Jun. 1980 20 p Presented at the Conf. on Inform., Computer, and Commun. Policy Organ. for Econ. Cooperation and Develop., Paris, 6-8 Oct. 1980 (PB80-204019; NTIA-SP-80-8) Avail: NTIS HC A02/MF A01 CSCL 05B

Certain fundamental policy assumptions emerge as the foundation of United States policies, although there is a need to strike balances in the significant tensions among these assumptions. These assumptions, as they manifest themselves in the information policies of the United States, and highlights of the tradeoffs which they imply are presented. The policies presented herein form the principles upon which the United States generally approaches international information policy issues. GRA

N81-14646*# Computer Sciences Corp., Hampton, Va. A COMPUTER PROGRAM FOR THE GENERATION OF LOGIC NETWORKS FROM TASK CHART DATA Final Report

Henry E. Herbert Washington NASA Dec. 1980 38 p refs (Contract NAS1-16078) (NASA-CR-3364) Avail: NTIS HC A03/MF A01 CSCL 09B

The Network Generation Program (NETGEN), which creates logic networks from task chart data is presented. NETGEN is written in CDC FORTRAN IV (Extended) and runs in a batch mode on the CDC 6000 and CYBER 170 series computers. Data is input via a two-card format and contains information regarding the specific tasks in a project. From this data, NETGEN constructs a logic network of related activities with each activity having unique predecessor and successor nodes, activity duration, descriptions, etc. NETGEN then prepares this data on two files that can be used in the Project Planning Analysis and Reporting System Batch Network Scheduling program and the EXPERT graphics program. M.G.

N81-15974*# Kansas Univ., Lawrence. A FEASIBILITY STUDY FOR ADVANCED TECHNOLOGY INTEGRATION FOR GENERAL AVIATION Final Report, 10 Apr. 1979 - 9 Apr. 1980

David L. Kohlman, Garey T. Matsuyama, Kevin E. Hawley, and Paul T. Meredith Nov. 1980 533 p refs (Contract NAS1-15770) (NASA-CR-159381; KU-FRL-414-1) Avail: NTIS HC A24/MF A01 CSCL 01B

An investigation was conducted to identify candidate technologies and specific developments which offer greatest promise for improving safety, fuel efficiency, performance, and utility of general aviation airplanes. Interviews were conducted with general aviation airframe and systems manufacturers and NASA research centers. The following technologies were evaluated for use in airplane design tradeoff studies conducted during the study: avionics, aerodynamics, configurations, structures, flight controls, and propulsion. Based on industry interviews and design tradeoff studies, several recommendations were made for further high payoff research. The most attractive technologies for use by the general aviation industry appear to be advanced engines, composite materials, natural laminar flow airfoils, and advanced integrated avionics systems. The integration of these technologies in airplane design can yield significant increases in speeds, ranges, and payloads over present aircraft with 40 percent to 50 percent reductions in fuel used. T.M.

N81-17950# Advisory Group for Aerospace Research and Development, Neuilly-Sur-Seine (France).

MANUAL OF DOCUMENTATION PRACTICES APPLICABLE TO DEFENCE-AEROSPACE SCIENTIFIC AND TECHNICAL INFORMATION, VOLUME 3

S. C. Schuler, ed. Oct. 1980 191 p refs 4 Vol. (AGARD-AG-235-Vol-3; ISBN-92-835-1373-8) Avail: NTIS HC A09/MF A01

Various aspects of information retrieval are described including the principles of post coordinate indexing, examples of feature and edge punched card systems, the use of computers to produce various types of indexes, and the role of dial up on-line systems. Information dissemination practices are outlined and a survey of procedures used by a number of international technical information centers is given. The preparation and reproduction of research and development publications in both paper and microfilm media are described. The factors involved in setting up production facilities are discussed.

N81-17978# Aerospace Medical Div., Brooks AFB, Tex. **AIR FORCE TECHNICAL OBJECTIVE DOCUMENT. AEROSPACE MEDICAL DIVISION FISCAL YEAR 1982 Final Report**

1980 47 p Supersedes AMD-TR-79-1 (AD-A093383; AMD-TR-80-1; AMD-TR-79-1) Avail: NTIS HC A03/MF A01 CSCL 05/8

This TOD describes the planning methodology used within AMD laboratories: seven technology areas to achieve our technical goals. Specifically, efforts are directed in the biotechnology program to man's adaptability, survivability, and performance capabilities within his operational environment. This research and development of AMD's functions is accomplished as disciplinary work by teams of biomedical scientists, engineers and physical scientists within the Air Force laboratories and the industrial and academic research and development communities. GRA

N81-18212*# BDM Corp., Huntsville, Ala. **COAL GASIFICATION SYSTEMS ENGINEERING AND ANALYSIS. VOLUME 1: EXECUTIVE SUMMARY Final Report**

31 Dec. 1980 56 p 10 Vol. (Contract NAS8-33824) (NASA-CR-161653; BDM/H-80-800-TR-Vol-1) Avail: NTIS HC A04/MF A01 CSCL 21D

Feasibility analyses and systems engineering studies for a 20,000 tons per day medium Btu (MBG) coal gasification plant to be built by TVA in Northern Alabama were conducted. Major objectives were as follows: (1) provide design and cost data to support the selection of a gasifier technology and other major plant design parameters, (2) provide design and cost data to support alternate product evaluation, (3) prepare a technology development plan to address areas of high technical risk, and (4) develop schedules, PERT charts, and a work breakdown structure to aid in preliminary project planning. Volume one contains a summary of gasification system characterizations. Five gasification technologies were selected for evaluation: Koppers-Totzek, Texaco, Lurgi Dry Ash, Slagging Lurgi, and Babcock and Wilcox. A summary of the trade studies and cost sensitivity analysis is included. E.D.K.

N81-18213*# BDM Corp., Huntsville, Ala. **COAL GASIFICATION SYSTEMS ENGINEERING AND**

ANALYSIS, VOLUME 2 Final Report

31 Dec. 1980 311 p 10 Vol.

(Contract NAS8-33824)

(NASA-CR-161654; BDM/H-80-800-TR-Vol-2) Avail: NTIS HC A14/MF A01 CSCL 21D

The major design related features of each generic plant system were characterized in a catalog. Based on the catalog and requirements data, approximately 17 designs and cost estimates were developed for MBG and alternate products. A series of generic trade studies was conducted to support all of the design studies. A set of cost and programmatic analyses were conducted to supplement the designs. The cost methodology employed for the design and sensitivity studies was documented and implemented in a computer program. Plant design and construction schedules were developed for the K-T, Texaco, and B&W MBG plant designs. A generic work breakdown structure was prepared, based on the K-T design, to coincide with TVA's planned management approach. An extensive set of cost sensitivity analyses was completed for K-T, Texaco, and B&W design. Product price competitiveness was evaluated for MBG and the alternate products. A draft management policy and procedures manual was evaluated. A supporting technology development plan was developed to address high technology risk issues. The issues were identified and ranked in terms of importance and tractability, and a plan developed for obtaining data or developing technology required to mitigate the risk. E.D.K.

N81-21953*# Michigan Univ., Ann Arbor. Dept. of Electrical and Computer Engineering.

THE NATURE AND TREATMENT OF PROFESSIONAL ENGINEERING PROBLEMS: THE TECHNICAL WRITING TEACHER'S RESPONSIBILITY

Ben F. Barton and Marthalee Barton /In NASA. Langley Research Center Tech. Writing: Past, Present and Future Mar. 1981 p 17-29 refs

Avail: NTIS HC A04/MF A01 CSCL 05B

Two general pedagogical responses among technical communication instructors were examined: the denial of responsibility for assessing the professional caliber of a student's treatment of a technical problem; and turning the rhetoric instructor's lack of technical expertise into a virtue. The differences between the textbook problems addressed by students and the problems addressed by professionals were determined. Suggestions for a more effective training method are presented. T.M.

N81-21954*# Pittsburg State Univ., Kans. **TECHNICAL WRITING IN AMERICA: A HISTORICAL PERSPECTIVE**

Michael E. Connaughton /In NASA. Langley Research Center Tech. Writing: Past, Present and Future Mar. 1981 p 31-41 refs

Avail: NTIS HC A04/MF A01 CSCL 05B

The practice of technical writing is described in the earliest phase, from the beginning in the seventeenth century until approximately 1815, when specializations begin to coalesce around professional organizations and specialized journals. Emphasis is placed on those traits that technical writing has in common with all species of composition. T.M.

N81-21955*# Rensselaer Polytechnic Inst., Troy, N. Y. Dept. of Language, Literature and Communication.

TECHNICAL COMMUNICATION: NOTES TOWARD DEFINING A DISCIPLINE

Philip M. Rubens /In NASA. Langley Research Center Tech. Writing: Past, Present and Future Mar. 1981 p 43-49 refs Avail: NTIS HC A04/MF A01 CSCL 05B

The view that technical writing is any writing that supports technology or technological activities was examined. An empirical methodology that reaches into communication, contemporary discourse theory, and even ethics was developed which offers a way for defining audiences, purposes, and by extension, the domain of technical communication. T.M.

N81-23805# SRI International Corp., Menlo Park, Calif. Artificial Intelligence Center.

RESEARCH ON PARALLELISM IN PROBLEM-SOLVING SYSTEMS Annual Technical Report

David E. Wilkins 30 Sep. 1980 14 p refs (Contract F49620-79-C-0188)

(AD-A097608; AFOSR-80-1150TR; ATR-1) Avail: NTIS HC A02/MF A01 CSCL 12/2

08 MANAGEMENT POLICIES

This report summarizes the first year of research on a system for automatically generating hierarchical plans containing parallel (concurrent) actions. This is a general planning and problem-solving system that is not tied to a particular domain. Results of this research might eventually be used in the development of systems for automatically generating plans to coordinate the activities of military personnel engaged in a common mission. Other domains of application could include logistical planning, planning to use many computers on a network concurrently, and planning to prepare and disseminate a report or other information to a large group of people. General-purpose problem-solving systems elicited wide interest in the early and mid-1970s, and Sacerdoti's NOAH was one of the most important general planners produced. Some of the results of the new design appeared in a technical publication which is reproduced in the Appendix. GRA

N81-23954# National Bureau of Standards, Washington, D.C. Inst. for Computer Sciences and Technology.

THE EXECUTIVES GUIDE TO DATA RESOURCE MANAGEMENT

Dec. 1980 40 p
(PB81-153520) Avail: NTIS HC A03/MF A01 CSCL 05B
Data Resource Management concerns knowledge and management of data and of its composition, sources, dissemination, flow, locations, and uses. It is a management program, supported by a Data Resource Directory system, which applies to the management of data the basic principles of resource management. GRA

N81-24016*# Jet Propulsion Lab., California Inst. of Tech., Pasadena. Control Center Operations.

DSN SCHEDULING SYSTEM

R. Dorham *In its Telecommun. and Data Acquisition*. 11 Apr. 1981 p 132-141

Avail: NTIS HC A08/MF A01 CSCL 05A

The Deep Space Network (DSN) Scheduling Group provides the operationally oriented administrative support necessary for the effective scheduling of the DSN. The scheduling system plus the levels of schedules are explained. E.D.K.

N81-24715# Advisory Group for Aerospace Research and Development, Neuilly-Sur-Seine (France).

SIGNIFICANCE OF CIRCADIAN RHYTHMS IN AEROSPACE OPERATIONS

Karl E. Klein (DFVLR, Bad Godesberg, West Germany) and Hans M. Wegmann Dec. 1980 64 p refs
(AGARD-AG-247; ISBN-92-835-1378-9) Avail: NTIS HC A04/MF A01

Reviewing experimental research and results from the pertinent literature, the significance of circadian rhythms is discussed under the following aspects: characteristics and interrelationships of environmental and biological circadian systems; circadian rhythms of mental and physical performance, as well as of susceptibility and resistance; modification of circadian cycling through external and internal factors; disturbance of circadian rhythmicity and sleep-wake cycling in air and space operations and shiftwork; consequences for performance efficiency and health; formulas; models and rest duty regulations; and recommendations for the passenger, crew, and management. The Biorhythm Theory is critically reviewed. T.M.

N81-24750# Federal Computer Performance Evaluation Simulation Center, Washington, D. C.

COMPUTER SCIENCE AND TECHNOLOGY: COMPUTER MODEL DOCUMENTATION GUIDE Final Report

Jan. 1981 61 p refs
(PB81-152118; NBS-SP-500-73; LC-80-600190) Avail: NTIS HC A04/MF A01 CSCL 09B

Guidelines to preparing documentation for computer models are presented. Recommended structures for four types of manuals providing model information for four different classes of audiences (managers, users, analysts, and programmers) is presented. This document specifies the content of sections and subsections for each type of manual. Manuals prepared using these guidelines will enable persons interested in a model to understand the capabilities and limitations of that model. GRA

N81-24983 International Institute for Applied Systems Analysis, Laxenburg (Austria).

WHO LEARNS WHAT? A CONCEPTUAL DESCRIPTION OF CAPABILITY AND LEARNING IN TECHNOLOGICAL SYSTEMS

Mark F. Cantley and Devendra Sahal Dec. 1980 40 p refs
(IIASA-RR-80-42) Avail: NTIS HC A03

Technological innovation and a general theory of developmental processes are considered, taking Bonner's description of biological development as an analogy. The pursuit of economies in scale (size and productive efficiency) exemplifies the parallelism with biological development. The evolution of technological capability is seen as a learning process in which information is acquired, stored, and transmitted. Efficient means of information or technology transfer (human capabilities) differentiate learning in technological fields from biological evolution by natural selection. The phenomenon known as cumulative experience, manifest in the learning curve is introduced. Learning is modeled as a multilevel process, and levels which distinguish the type of learning or information transfer characteristic of each level are described, answering the question 'who learns what'.

Author (ESA)

N81-25056# Mitre Corp., McLean, Va.

CONSOLIDATED CAB DISPLAY (CCD) SYSTEM, PROJECT PLANNING DOCUMENT (PPD)

Al Asch and L. Wuebker Feb. 1981 79 p refs

(Contract DOT-FA01-81-C-10001)

(AD-A098651; MTR-81W49; FAA-RD-81-6) Avail: NTIS HC A05/MF A01 CSCL 17/2

This report provides the planning guidance for the development, installation, testing and evaluation for the Consolidated Cab Display (CCD) System. The Federal Aviation Administration (FAA) is acquiring two systems for engineering tests and operational evaluations to determine system reliability and design acceptability to Air Traffic Control Tower (ATCT) and Terminal Radar Control (TRACON) controllers. One system will be installed at the FAA Technical Center for engineering and operational evaluations, and a second one at the Atlanta ATCT/TRACON for operational evaluations. The evaluations will provide the FAA with information for making decisions and developing programs for future automation support to the ATCT/TRACON air traffic control specialists. Author (GRA)

N81-25863# Computer Systems Management, Inc., Arlington, Va.

DEFENSE MICROCOMPUTING IN THE 1980S: PROBLEMS AND RESEARCH PRIORITIES Quarterly Technical Report, 1 Oct. 31 Dec. 1980

James F. Wittmeyer, III 31 Dec. 1980 54 p refs

(Contract MDA903-80-C-0155; ARPA Order 3829)

(AD-A094076; CSM-81-01; TR-81-01) Avail: NTIS HC A04/MF A01 CSCL 12/1

The addition of the production rate variable to the standard learning curve model was studied and validated as a technique in estimating direct labor hours for airframes, avionics equipment, and aircraft engines. To determine if the technique was applicable to air launched missiles, the Maverick and Short Range Attack Missile (SRAM) production programs were evaluated. Addition of the production rate variable contributed to model estimating capabilities. Auto correlation of residuals was reduced in almost every case, enhancing the models' appropriateness for the data studied. The model is useful in many missile production programs, but the specific program must be individually evaluated prior to model application. Model improvements were also implemented to reduce computer run time, increase model flexibility, and provide residual analysis statistics. S.F.

N81-26731 Kansas Univ., Lawrence.

EQUIVALENT NETWORKS AND BACKWARD TREE SOLUTIONS Ph.D. Thesis

Roger Joseph Schreff 1980 269 p

Avail: Univ. Microfilms Order No. 8111754

Network analysis is treated from a symbolic or functional point of view. The network flow equations for both product form and Markovian networks are shown to involve the solution of similar sets of homogeneous equations. It is shown that these equations may be solved symbolically through an examination of the backward trees of the state transition diagrams. The applicability of the backward tree theorem to open and closed product form networks involving single or multiple job classes and to networks of the Markovian type is demonstrated. The symbolic solutions provided by the backward tree theorem are

examined with regard to the availability of simple expressions that relate station utilization and three parameters: number of jobs, service rate, and routing probability. The backward tree theorem is also used in an investigation of equivalent networks. These equivalences are shown to be effective tools in parametric analysis. Dissert. Abstr.

N81-26744*# Draper (Charles Stark) Lab., Inc., Cambridge, Mass.

A STUDY OF SOFTWARE MANAGEMENT AND GUIDELINES FOR FLIGHT PROJECTS Interim Report

9 Apr. 1980 182 p

(Contract NASw-3350)

(NASA-CR-164525) Avail: NTIS HC A09/MF A01 CSCL 09B

A survey of present software development policies and practices, and an analysis of these policies and practices are summarized. Background information necessary to assess the adequacy of present NASA flight software development approaches is presented. T.M.

N81-26747*# Computer Sciences Corp., El Segundo, Calif. Engineering Systems Dept.

TIMELINE RESOURCE ANALYSIS PROGRAM (TRAP): USER'S MANUAL AND PROGRAM DOCUMENT

Jacqueline G. Sessler Jun. 1981 158 p

(Contract NAS8-31640)

(NASA-CR-161812) Avail: NTIS HC A08/MF A01 CSCL 09B

The Timeline Resource Analysis Program (TRAP), developed for scheduling and timelining problems, is described. Given an activity network, TRAP generates timeline plots, resource histograms, and tabular summaries of the network, schedules, and resource levels. It is written in ANSI FORTRAN for the Honeywell SIGMA 5 computer and operates in the interactive mode using the TEKTRONIX 4014-1 graphics terminal. The input network file may be a standard SIGMA 5 file or one generated using the Interactive Graphics Design System. The timeline plots can be displayed in two orderings: according to the sequence in which the tasks were read on input, and a waterfall sequence in which the tasks are ordered by start time. The input order is especially meaningful when the network consists of several interacting subnetworks. The waterfall sequence is helpful in assessing the project status at any point in time. M.G.

N81-26982* Executive Office of the President, Washington, D.C. Office of Administration.

A GUIDE TO PUBLICATIONS OF THE EXECUTIVE OFFICE OF THE PRESIDENT, VOLUME 2, ISSUE 4 Progress Report, Jan. 1980 - Jan. 1981

20 Jan. 1981 17 p

(PB81-168593) Avail: NTIS HC A02/MF A01 CSCL 05B

The policy making aspects of the executive branch of the Federal Government are reviewed. The publications are used by the EOP staff, members of Congress and their staffs, employees of other executive agencies, state and local government officials, researchers, journalists, political scientists, economists, and others interested in the work of the EOP agencies. The quarterly Guide to Publications of the Executive Office of the President has been introduced as a major component of the EOP Publications Management Program. Publications are grouped by sponsoring EOP agency and the source of availability is given for each publication. GRA

N81-27473*# Automation Industries, Inc., Silver Spring, Md. Vitro Labs. Div.

DEPARTMENT OF DEFENSE PRECISE TIME AND TIME INTERVAL PROGRAM IMPROVEMENT PLAN

James R. Bowser In NASA. Goddard Space Flight Center Proc. of the 12th Ann. Precise Time and Time Interval Appl. and Planning Meeting Mar. 1981 p 115-125

Avail: NTIS HC A99/MF A01 CSCL 20E

The United States Naval Observatory is responsible for ensuring uniformity in precise time and time interval operations including measurements, the establishment of overall DOD requirements for time and time interval, and the accomplishment of objectives requiring precise time and time interval with minimum cost. An overview of the objectives, the approach to the problem, the schedule, and a status report, including significant findings

relative to organizational relationships, current directives, principal PTTI users, and future requirements as currently identified by the users are presented. T.M.

N81-27691*# Food and Agriculture Organization of the United Nations, Rome (Italy).

PLANNING OF PROJECTS FOR TECHNICAL ASSISTANCE

A. Aydin In ESA Satellite Remote Sensing Appl. to Rural Disasters 1981 p 173-174

Avail: NTIS HC A09/MF A01

A synthesis of FAO project planning methodology is presented. A need for change in an area or sector can lead to identification of a project. Analysis of the situation around that need helps in setting intermediate and immediate objectives and in the formulation of the project concerned, including built-in monitoring procedures to facilitate measuring the effect and impact of its implementation. Once the project is fully formulated it is documented following a given format which provides a framework to describe the basic elements and resource requirements.

Author (ESA)

N81-27966* BioTechnology, Inc., Falls Church, Va.

TECHNICAL ORDER MANAGERS REFERENCE DATA Final Report, May 1978 - May 1980

G. Richard Hatterick and Harold E. Price Brooks AFB, Tex. Air Force Human Resources Lab. May 1981 297 p refs

(Contract F33615-78-C-0016; AF Proj. 1710)

(AD-A099779; AFHRL-TR-80-51)

Avail: NTIS HC A13/MF A01 CSCL 05/1

In past years, research by Air Force and other DOD agencies has resulted in the development of several more effective techniques for developing and for presenting technical data for maintenance. Application of these development techniques and improved presentation formats for operational use has been hindered by the fact that technical data managers frequently do not have sufficient information available on the improved techniques and formats to allow them to select and procure the improved data. The guidelines developed by this effort can be used by personnel who develop technical data for the Air Force and by those who manage such efforts. A thorough review of the state of the art in developing, presenting, and procuring technical data was accomplished to provide the basis for developing the guidelines. This was accomplished first by reviewing formats, specifications, and applicable literature and by then conducting extensive interviews with government and industry personnel who are knowledgeable of, and experienced in, current technical data procedures. The next phase involved analysis of these data, the selection of candidate formats, the development of descriptions on the formats, development of criteria for selecting formats and development of guidelines for procuring data. This report can be used as a basic reference publication by all individuals involved in Acquisition and Management of Air Force Technical Orders. The report provides the following information: developments in procedural data formats, job performance aid concepts and techniques, format test and evaluation, and format option selection data. GRA

N81-27967* BioTechnology, Inc., Falls Church, Va.

TECHNICAL ORDER MANAGEMENT AND ACQUISITION Final Report

G. Richard Hatterick and Harold E. Price Brooks AFB, Tex. Air Force Human Resources Lab. May 1981 410 p refs

(Contract F33615-78-C-0016; AF Proj. 1710)

(AD-A099705; AFHRL-TR-80-50)

Avail: NTIS HC A18/MF A01 CSCL 05/1

In past years, research by Air Force and other DOD agencies has resulted in the development of several more effective techniques for developing and for presenting technical data for maintenance. Application of these development techniques and improved presentation formats for operational use has been hindered by the fact that technical data managers frequently do not have sufficient information available on the improved techniques and formats to allow them to select and procure the improved data. The guidelines developed by this effort can be used by personnel who develop technical data for the Air Force and by those who manage such efforts. A thorough review of the state of the art in developing, presenting and procuring technical data was accomplished to provide the basis for developing the guidelines. This was accomplished first by reviewing available formats, specifications, and applicable literature and by then conducting extensive interviews with government and

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industry personnel who are knowledgeable of, and experienced in, current technical data procedures. The next phase involved analysis of these data, the selection of candidate formats, the development of descriptions on the formats, development of criteria for selecting formats and development of guidelines for procuring data. This report provides specific information and guidance for the acquisition and management of Air Force technical orders (T.O.s). The report provides the following information: an overview explaining the guidebook scope, organization, and contents accompanied with an explanation of how to use the guidebook. GRA

N81-27972# Advisory Group for Aerospace Research and Development, Neuilly-Sur-Seine (France).

MANUAL OF DOCUMENTATION PRACTICES APPLICABLE TO DEFENCE-AEROSPACE SCIENTIFIC AND TECHNICAL INFORMATION, VOLUME 4

S. C. Schuler, ed. Mar. 1981 124 p refs
(AGARD-AG-235-Vol-4; ISBN-92-835-1382-7) Avail: NTIS HC A06/MF A01

Several aspects of technical information services are considered. Security requirements, the management of documentation centers, and national and international information networks are discussed. For individual titles, see N81-27973 through N81-27975.

N81-27973# Advisory Group for Aerospace Research and Development, Neuilly-Sur-Seine (France).

STORAGE AND SECURITY CONTROL, SECTION 10

Michael G. Sims (Sims, (Michael G.), England) *In its Manual of Doc. Pract. Appl. to Defence-Aerospace Sci. and Tech. Inform., Vol. 4* Mar. 1981 p 5-31 refs

Avail: NTIS HC A06/MF A01

The organization and administration of the security arrangements in a documentation center are described. The problems raised by the need for physical and personnel security are discussed. Document security requirements are considered from publication stage, through to issuing, dissemination, release, filing, storage, handling, circulation control, downgrading, and final disposal. The security grading of document is described. Access to sensitive documents by onsite users and external borrowers is considered. The differing requirements for security of items in various formats are discussed. The protection required in peripheral areas such as reprographic and computer rooms is considered. J.D.H.

N81-27974# Manchester Univ. (England).

ORGANIZATION AND MANAGEMENT, SECTION 11

Diana M. Leich *In AGARD Manual of Doc. Pract. Appl. to Defence-Aerospace Sci. and Tech. Inform., Vol. 4* Mar. 1981 p 33-92 refs

Avail: NTIS HC A06/MF A01

The establishment of a technical information center and its aims and objectives are discussed. The identification and fulfillment of user requirements are shown to be vital to its success and the way in which these can be achieved by good management is emphasized. Careful planning is essential at all stages and many aspects of planning are described. The role of the staff, in particular that of the information manager, is defined and the effectiveness of the information center is shown to be highly dependent on their contribution to it. Budget management and stock control are discussed and the impact of mechanization is considered. Active promotion of the services of the center is necessary and ways of achieving this are outlined. Author

N81-28092# Aeronautical Research Labs., Wright-Patterson AFB, Ohio. Directorate of Avionics Engineering.

AFSC STANDARDIZATION CONFERENCE, 1553, 1589, 1750, 1760, ADA. VOLUME 1: PROCEEDINGS

Erwin C. Gangl Nov. 1980 560 p refs Conf. held in Dayton, Ohio, 18-20 Nov. 1980
(AD-A100575; ASD-TR-80-5050-Vol-1) Avail: NTIS HC A24/MF A01 CSCL 01/3

This is a collection of unclassified papers to be distributed to the attendees of the AFSC Avionics Standardization Conference at the Convention Center, Dayton, Ohio. The purpose of the conference is to state AF policy on standardization, educate government and industry management, and present and demonstrate hardware and software tools. GRA

N81-28093# Aeronautical Research Labs., Wright-Patterson AFB, Ohio. Directorate of Avionics Engineering.

AFSC STANDARDIZATION CONFERENCE, 1553, 1589, 1750, 1760, ADA. VOLUME 2: PROCEEDINGS STANDARDS
Erwin C. Gangl, ed. and Stephen E. Smith, ed. Nov. 1980 476 p refs Conf. held in Dayton, Ohio, 18-20 Nov. 1980
(AD-A100577; ASD-TR-80-5050-Vol-2) Avail: NTIS HC A21/MF A01 CSCL 01/4

This is a collection of unclassified papers to be distributed to the attendees of the AFSC Avionics Standardization Conference at the Convention Center, Dayton, Ohio. The purpose of the conference is to state AF policy on standardization, educate government and industry management, and present and demonstrate hardware and software tools. GRA

N81-28586# Sandia Labs., Albuquerque, N. Mex.
INCENTIVES FOR SOLAR ENERGY IN INDUSTRY

Kenneth D. Bergeron May 1981 33 p refs

(Contract DE-AC04-76DP-00789)

(SAND-81-0048) Avail: NTIS HC A03/MF A01

Several issues are analyzed on the effects that government subsidies and other incentives have on the use of solar energy in industry, as well as on other capital-intensive alternative energy supplies. Discounted cash flow analysis is used to compare tax deductions for fuel expenses with tax credits for capital investments for energy. The result is a simple expression for tax equity. The effects that market penetration of solar energy has on conventional energy prices are analyzed with a free market model. It is shown that net costs of a subsidy program to the society can be significantly reduced by price. Several government loan guarantee concepts are evaluated as incentives that may not require direct outlays of government funds; their relative effectiveness in achieving loan leverage through project financing, and their cost and practicality, are discussed. DOE

N81-28814# Texas Univ. at Arlington. Center for Cybernetic Studies.

NETGEN-2: A SYSTEM FOR GENERATING STRUCTURED NETWORK-BASED MATHEMATICAL PROGRAMMING TEST PROBLEMS

Joyce J. Elam and Darwin Klingmna Jan. 1981 14 p refs
(Contract N00014-80-C-0242; Grant NSF MCS-78-27590)

(AD-A100457; CCS-393) Avail: NTIS HC A02/MF A01 CSCL 12/2

The increased importance of designing and implementing algorithms to solve particular management problems has created the need for more robust test problem generators that can match the overall structure and parameter values of these problems. Of particular interest are management problems that can be modeled using a network structure. This paper discussed the design of a system for generating network-based mathematical programming test problems that conform to user-supplied structural parameter characteristics. Author (GRA)

N81-29042# Argonne National Lab., Ill. Energy and Environment Systems Div.

APPLICATION OF A METHODOLOGY FOR EVALUATION OF INTERTECHNOLOGY TRADEOFFS: AN ILLUSTRATIVE CASE STUDY

R. G. Whitfield, W. A. Buehring, M. J. Jusko, and T. D. Wolsko Nov. 1980 49 p refs

(Contract W-31-109-eng-38)

(ANL/EES-TM-127) Avail: NTIS HC A03/MF A01

The problem of selecting the best research and development for developing long term energy technologies that use coal is discussed. Best is defined in terms of 11 attributes, or measures of performance. Uncertainties were determined for the many, complex outcomes that result from each strategy, and the information was systematically structured for evaluation. Preferences for the various outcomes were quantified by assessing a multi-attribute utility function over the 11 single attributes. The best alternative was chosen using maximization of expected utility as a guide. Extensive sensitivity analyses showed that one strategy, evolutionary development, was best over a wide range of plausible assumptions. DOE

N81-29336# National Telecommunications and Information Administration, Boulder, Colo.

INTERIM FEDERAL STANDARD 1033 REFERENCE MANUAL

Neal B. Seitz Dec. 1980 131 p refs

(PB81-174898; NTIA-Rept-80-55)

Avail: NTIS

HC A07/MF A01 CSCL 17B

There is a growing need within the Federal government for a user oriented, system independent, functional means of

specifying data communication performance. A recently published Federal Standard, Interim Federal Standard 1033, defines a set of standard performance parameters designed to meet that need. The need for the standard is outlined as well as the potential benefits of its use, from the viewpoint of the end user, the communication supplier, and the communication manager. The objectives and content of the standard are summarized in informal, nontechnical terms the meaning and importance of each standard parameter is examined in a series of tutorial parameters essays. Typical parameter values are presented, and design implications are discussed. GRA

N81-30831# California Univ., Livermore. Lawrence Livermore Lab. Dept. of Electronics Engineering.
SELECTING AND IMPLEMENTING AN INTERACTIVE COMPUTER AIDED DESIGN DRAFTING/ MANUFACTURING (CADD/M) SYSTEM

Frederick J. Norton 23 Sep. 1980 54 p ref Presented at the 6th Ann. ADUA Meeting, Denver, 30 Sep. - 3 Oct. 1980 (Contract W-7405-eng-48)

(UCRL-84965; CONF-8009151-3) Avail: NTIS HC A04/MF A01

Procedures for selecting and successfully implementing a CADD/M system are outlined. The techniques used to evaluate the system are examined. The methods that can be used to test a CADD/M system are described including benchmark drawings and specifications, human engineering considerations, and other evaluation criteria. DOE

N81-30832# California Univ., Livermore. Lawrence Livermore Lab. Dept. of Electronics Engineering.
COMPUTER-AIDED DESIGN DRAFTING/ MANUFACTURING (CADD/M) FACILITY PREPARATION

Frederick J. Norton 23 Sep. 1980 16 p Presented at the 6th Ann. ADUA Meeting, Denver, 30 Sep. 3 Oct. 1980 (Contract W-7405-eng-48)

(UCRL-84964; CONF-8009151-4) Avail: NTIS HC A02/MF A01

Such things as temperature requirements, lighting, power, security and fire protection are discussed. Also, future expansion needs are considered so that major construction will not be required for future years. Advanced planning in these areas is needed to ensure successful implementation of a CADD/M system. This leads to considerable cost savings, and in the long run, improves the scheduling for an entire project, from initial design to final production. This careful preparation minimizes unplanned events and problem areas. R.C.T.

N81-32463# California Univ., Berkeley. Lawrence Berkeley Lab.
PROVIDING USER SUPPORT IN A CHANGING ENVIRONMENT

Joan Franz Apr. 1981 14 p ref Presented at the Am. Computing Machinery Special Interest Group on Computer Personnel Conf., Washington, D.C., 3-5 Jun. 1981 (Contract W-7405-eng-48)

(LBL-12578; DE81-024991; CONF-810688-1) Avail: NTIS HC A02/MF A01

In the face of rapidly changing products and user needs, a familiar problem to large computing facilities today is deciding what services to offer, and how to offer them. Dropping hardware costs, increasing need for interactive computing (including text processing, graphics, and data management systems), and fiscal limitations for both the central facility and the users are some of the changes being experienced at a laboratory. How a central computing facility can provide the services users need in the most expedient and inexpensive way possible is discussed. DOE

N81-33088# SRI International Corp., Menlo Park, Calif. Artificial Intelligence Center.

AN INTERACTIVE PLANNING SYSTEM

David E. Wilkins and Ann E. Robinson 1 Jul. 1981 25 p refs

(Contracts F49620-79-C-0188; N00014-80-C-0300) (AD-A103019; TN-245) Avail: NTIS HC A02/MF A01 CSCL 09/2

A computer system that interacts with a person planning some activity was designed to be independent of the problem area in which the planning takes place. The system allows the

person to: (1) represent the problem area and the actions that may be performed in it; (2) explore alternative plans for performing the activity; (3) monitor the execution of a plan so produced; and (4) modify the plan as needed during its execution. The system currently being tested allows a person to produce a plan interactively, suggesting alternative actions, showing the effects of actions on the situation, checking for problems in the plan, and (occasionally) suggesting corrections for such problems. The plan is represented as a hierarchy of actions linked together in a network, generally called a 'procedural network'. GRA

N81-33096# American Library Association, Chicago, Ill.

LIBRARY DATA COLLECTION HANDBOOK

MaryJo Lynch Feb. 1981 236 p refs

(Contract OE-300-80-0058)

(PB81-203184; NCES-81-210)

Avail: NTIS

HC A11/MF A01 CSCL 05B

A handbook for management information which is useful in academic, public, school, and special libraries is reviewed. The premise of the handbook is that all types of libraries have a common set of functions, purpose, and resources which outweigh the differences in setting, size, and organizational goals. The data base is built upon a common set of terms related to those common functions, purposes and resources, while accommodating and providing for those terms unique to each type of library. This handbook presents categories of information that are judged to be important in describing the library, and provides definition of those categories. The handbook is also concerned with the external reporting requirements placed upon the library state and Federal agencies, professional organizations, and other data collectors. GRA

LEGISLATION

Includes law (jurisprudence), hearings, government industry relations, Federal and international resources, legislative effects and applications, patents, and regulations.

A81-11006 # Optimal control of the elliptical orbit of an earth satellite with a low-thrust engine (Optimal'noe upravlenie ellipticheskoi orbitoi sputnika zemli s dvigatelem maloitiagi). V. V. Vasil'ev. *Kosmicheskie Issledovaniia*, vol. 18, Sept.-Oct. 1980, p. 707-714. 10 refs. In Russian.

The optimal correction of an elliptical orbit is considered for the case of a satellite with an ideal low-thrust engine. The Pontryagin maximum principle is used to solve the formulated variational problem. The optimal correction problem is solved for perigee and apogee distances, and the effect of atmospheric drag on the solution of the variational problem is analyzed. B.J.

A81-13933 # A comparison of actinometric observations during the 'Monsoon-77' expedition (Sravnenie aktinometricheskikh nabludenii v ekspeditsii 'Musson-77'). V. P. Pchelintsev. *Meteorologicheskoe Issledovaniia*, no. 25, 1980, p. 62, 63. In Russian.

The results of the comparison of actinometric observations by ships of the 'Monsoon-77' expedition are compared with the measurements at the port of Calcutta, India. It was found that the Soviet and Indian measurements of total and reflected radiation agreed within plus or minus 6%, and of the long-wave range within plus or minus 16%. A.T.

A81-13934 # A comparison of hydrochemical determinations of the 'Monsoon-77' expedition (Rezultaty sravnenii metodov gidrokhimicheskikh opredelenii, vypolnennykh v ekspeditsii 'Musson-77'). Iu. N. Volkov and M. I. Nikulin. *Meteorologicheskoe Issledovaniia*, no. 25, 1980, p. 64-71. In Russian.

The hydrochemical observations recorded during instrument calibration by the 'Monsoon-77' expedition are presented. The analysis of results collected within a radius of 1 mile shows that the discrepancies from the mean value of each measured element significantly exceed instrumental accuracy. The possible methods of improving instrument measurements and accuracy of future calibrations are discussed. A.T.

A81-13936 A simple algorithm for the direct extraction of the two-dimensional surface image spectrum from the return signal of a synthetic aperture radar. K. Hasselmann (Max-Planck-Institut für Meteorologie, Hamburg, West Germany). *International Journal of Remote Sensing*, vol. 1, July-Sept. 1980, p. 219-240. 22 refs.

The proposed signal-image-Fourier-transform (SIFT) algorithm is applicable to scenes which are greater than the synthetic aperture radar (SAR) footprint and can be projected from slant-range to horizontal-range coordinates without significant nonlinear distortion. Scenes smaller than SAR footprint can be accommodated by smoothing the lag variables in the algorithm. The SIFT algorithm may be interpreted physically as the application of a SAR to synthesize a continuous two-dimensional dual-frequency (Delta k)-scatterometer. A preliminary analysis suggests that the SAR method of generating the entire range of difference frequencies within a single chirped pulse may have signal-to-noise advantages over the alternative method of sweeping through the required range of difference frequencies in a sequence of pulses. V.L.

A81-14926 # Recursive formulas for determining intermediate coordinates of earth satellites (Rekurrentnye formuly dlia opredeleniia promezhutochnykh koordinat ISZ). N. Georgiev and Ch. Dokev (B'lgarska Akademiia na Naukite, Tsentral'na Laboratoriia po Vissha Geodeziia, Sofia, Bulgaria). *Vissha Geodeziia*, no. 6, 1980, p. 3-8. 8 refs. In Russian.

Recursive formulas are derived for the coefficients of power series of intermediate coordinates of satellites in a spheroidal

coordinate system. The formulas make possible digital computation of the solutions with arbitrary accuracy. B.J.

A81-18073 The federal role in airport noise control planning. J. E. Wesler (FAA, Washington, D.C.). In: *International Air Transportation Conference*, New Orleans, La., April 30-May 3, 1979, Proceedings. Volume 1. New York, American Society of Civil Engineers, 1979, p. 375-382.

Since receiving statutory authority in 1968, the FAA has developed and followed a step-by-step, deliberate program to impose noise limits on all aircraft. Noise reduction at the source cannot solve the aviation noise problem, however, since aircraft can never be silent. Recognizing this, the Department of Transportation (DOT)/FAA Aviation Noise Abatement Policy of November 18, 1976, spells out the shared responsibilities among all elements of the aviation community for aviation noise abatement. This paper reviews briefly these shared responsibilities for aviation noise abatement, and describes those functions which the Federal government is fulfilling. (Author)

A81-18316 L-SAT - Europe's large satellite for the eighties. P. D. Biggs and J. L. Blonstein (British Aerospace, Space and Communications Div., Stevenage, Herts., England). *International Astronautical Federation, International Astronautical Congress, 31st, Tokyo, Japan, Sept. 22-28, 1980, Paper 80-D-169*. 16 p. Research supported by the European Space Agency.

The ESA market evaluation of telecommunications over the next 20 years suggests needs that range from thin-route rural telephony to multi-national videoconferencing and direct TV broadcast, with EUTELSAT's forecasts of ECS traffic indicating saturation by 1987. L-SAT, with as many as 50 transponders with a total capacity of 90,000 half-circuits, has a capacity of five times greater than that of the ECS-sized spacecraft and will be capable of covering those needs to the end of the century. As a result of the market surveys and of the subsequent technical requirement considerations, the L-SAT 1 first-flight model will be designed to meet the 2300 kg in transfer orbit case, but a design-for-growth approach for all subsystems will also be specified. L-SAT 1, to be launched in 1984, will provide high-density communications for business services in 14/12 GHz and direct broadcast TV in 17/12 GHz with fixed and steerable antennas. Four kW of power are to be provided in sunlight and one kW in eclipse. Details on launch vehicle (Ariane/Shuttle), liquid boost motor selection, array configuration, and the three-axis stabilization system are given. R.S.

A81-18939 Design and development of neutral beam module components. P. M. Holl, R. H. Bulmer, L. W. Dilgard, J. A. Horvath, A. W. Molvik, G. D. Porter, J. W. Shearer, D. S. Slack (California University, Livermore, Calif.), and J. S. Colonias (California University, Berkeley, Calif.). In: *Symposium on Engineering Problems of Fusion Research*, 8th, San Francisco, Calif., November 13-16, 1979, Proceedings. Volume 1. Piscataway, N.J., Institute of Electrical and Electronics Engineers, Inc., 1979, p. 195-197. Contract No. W-7405-eng-48.

The Mirror Fusion Test Facility (MFTF) injection system consists of twenty 20 keV start-up, and twenty-four 80 keV sustaining neutral beam source modules. The neutral beam modules are mounted in four clusters equally spaced around the waist of the vacuum vessel which contains the superconducting magnets. A module is defined here as an assembly consisting of a beam source and the interfacing components between that beam source and the vacuum chamber. Six major interfacing components are the subject of this paper. They are the magnetic shield, the neutralizer duct, the isolation valve, mounting gimbals, aiming bellows and actuators. (Author)

A81-20014 Remarks concerning the admission of observers to air traffic conferences of the International Air Transport Association (Anmerkungen zur Zulassung von Beobachtern bei den Verkehrskonferenzen des internationalen Dachverbandes der Linienluftverkehrsgesellschaften /IATA/). G. Reimer. *Zeitschrift für Luft- und Weltraumrecht*, vol. 29, Dec. 1980, p. 323-326. 8 refs. In German.

A81-20969 Mathematical methods in the synthesis and identification of thin film systems. H. Kaiser (Potsdam, Pädagogische

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Hochschule, Potsdam, East Germany) and H.-C. Kaiser (Deutsche Akademie der Wissenschaften, Zentralinstitut für Mathematik und Mechanik, Berlin, East Germany). *Applied Optics*, vol. 20, Jan. 1, 1981, p. 54-60. 24 refs.

The synthesis and identification of layered media is represented as an inverse problem for the wave equation or a related Schrödinger equation. Analytically it can be solved by using a relation between the reflection coefficient and the refractive-index profile, resulting from a Bremmer series solution of the wave equation. With a view to practical synthesis within a given system family three approaches are discussed: complete scanning by means of pattern recognition; investigation of a related Tschebyshev approximation problem; and application of quasi-linearization. (Author)

A81-20980 **Comments on the asymptotic treatment of tokamak MHD-stability at large aspect ratio.** E. Rebhan (Max-Planck-Institut für Plasmaphysik, Garching; Düsseldorf, Universität, Düsseldorf, West Germany) and A. Salat (Max-Planck-Institut für Plasmaphysik, Garching, West Germany). *Nuclear Fusion*, vol. 20, Dec. 1980, p. 1543-1548. 15 refs. EURATOM-sponsored research.

It is shown that in the conventional asymptotic treatment of the perturbational vacuum field a part of its m equals 0 contribution is omitted or the entire m equals 0 contribution is improperly treated. The correct treatment of tokamak MHD stability should be effective when the asymptotic derivation is carried to a higher order; this is demonstrated by an example of axisymmetric stability where the next order is logarithmic in the inverse aspect ratio. It is concluded that a significant qualitative impact of the correct treatment of stability occurs in the regime of experimental tokamak operation at a finite aspect ratio. A.T.

A81-25937 **Implementation of the federal performance standard for laser products.** J. E. Dennis (U.S. Food and Drug Administration, Bureau of Radiological Health, Rockville, Md.). In: *Practical electro-optical instruments and techniques*; Proceedings of the Seminar, Huntsville, Ala., September 30-October 2, 1980. Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers, 1980, p. 2-9. 11 refs.

A81-30469 **Air pollution constraints on increased coal use by industry - An international perspective.** E. S. Rubin (Carnegie-Mellon University, Pittsburgh, Pa.). *Air Pollution Control Association, Journal*, vol. 31, Apr. 1981, p. 349-360. 50 refs.

Technological options for decreasing air pollutant emissions from coal-fired industrial boilers are reviewed in detail. Data compiled from current technical literature are analyzed to determine energy penalties, solid or liquid waste impacts, and economic costs associated with particulate and SO₂ removal systems for different boiler sizes, coal types, and air pollutant emission levels. It is argued that national decisions regarding acceptable tradeoffs among these factors will determine the nature of future emission control constraints on the increased use of coal. It is concluded that the development of compatible industrial and environmental policies depends on extensive consultation between industrial and regulatory policy makers. O.C.

A81-31950 **International air law. Book 1 (Mezhdunarodnoe vozdušnoe pravo. Kniga 1).** Edited by A. P. Movchan. Moscow, Izdatel'stvo Nauka, 1980. 352 p. In Russian.

The basic principles and concepts of international air law are reviewed. Particular attention is given to airspace law, commercial rights of states in international aviation, and to cases of unlawful interference in civil aviation. Finally, international cooperation in civil aviation is discussed, with attention given to the activities of both state and private organizations. B.J.

A81-33269 **Solar access - Is there a shining future.** L. Heller (U.S. Department of Energy, Washington, D.C.). *Northrop University Law Journal of Aerospace, Energy, and the Environment*, vol. 2, Sept. 1980, p. 1-13. 69 refs.

Legal implications of the question of safeguarding access to solar energy are discussed as increased U.S. per capita use and population growth has led to energy dependence and the search for alternatives. Solar energy is a constant and renewable source but there must be an

adequate legal structure. Legislation must provide protection and incentives. Major Federal legislation was passed in 1974 and by the end of 1979 at least forty states had passed development-related legislation. The access question involves consideration of available types of solar systems and variations in the siting of the units. Zoning regulations are considered effective for encouraging solar use and protecting access. The legal right to sunlight access is not recognized in the U.S. and access may be blocked by adjacent structures. This is the central solar access question. The British Doctrine of Ancient Lights granting rights after 27 years of use was proposed as a basis for U.S. Legislation but is not acceptable. Analogies with radio and television reception, water rights, and nuisance law have been considered. The recommended approach combines government protective regulation and incentives along with voluntary private agreements. Easements for access can be negotiated and zoning and land-use planning can take solar use into consideration. D.B.

A81-33274 **A synopsis of Federal solar energy legislation.** R. K. Powlan. *Northrop University Law Journal of Aerospace, Energy, and the Environment*, vol. 2, Sept. 1980, p. 71-83. 92 refs.

Existing Federal legislation that pertains to the solar energy industry is reviewed. Particular consideration is given to Title 7 of the United States Code which codifies a great many statutes to help the expansion of the solar energy industry; Title 15 of the Code which authorizes the Small Business Administration to enter into loans aiding the solar energy industry; and Title 42 of the Code which deals with many statutes concerning almost every conceivable application of solar energy and related problems. It is concluded that Federal legislation dealing with the problems of solar energy is extensive and multifaceted. There are no fewer than three Federal information agencies designed to collect and distribute information, i.e., the Solar Photovoltaic Energy Advisory Committee, the Solar Energy Research Institute, and the Solar Information Data Bank. B.J.

A81-33879 # **Federal policies affecting airport noise compatibility programs.** J. E. Wesler (FAA, Washington, D.C.). *AIAA, SAE, ASCE, ATRIF, and TRB, International Air Transportation Conference, Atlantic City, N.J., May 26-28, 1981, AIAA Paper 81-0829*. 5 p. 5 refs.

Airport noise compatibility programs as affected by federal policies are discussed, and local planning and control to mitigate residual noise impacts are investigated. Three concepts proposed by the Federal Aviation Administration (FAA) as part of the federal plan to combat airport noise, are analyzed. They stipulate control of noise at its source - the aircraft, local controls over the use of aircraft at each airport, and the use of land around airports which is left to local authorities. Source-noise control and limitations through a series of regulations are reviewed. New regulations, describing the procedures, standards, and methodology for the development, submission and review of airport noise exposure maps and airport noise compatibility programs are mentioned. E.B.

A81-36408 # **Commercial space activities under the Moon Treaty.** M. Menter (Counsel, Haffer and Alterman; International Institute of Space Law, Washington, D.C.). In: *Colloquium on The Law of Outer Space*, 23rd, Tokyo, Japan, September 21-28, 1980, Proceedings. New York, American Institute of Aeronautics and Astronautics, Inc., 1981, p. 35-47.

The Moon Treaty, on adoption, will establish the principle that the moon and its natural resources are the common heritage of mankind. The establishment of an international regime is contemplated to govern exploitation of such resources with 'equitable sharing' by all states in the benefits derived from those resources, with 'special consideration' for developing countries and countries contributing to the exploitation. This paper examines the apprehension of private enterprise to invest funds in a moon activity requiring sharing of profits with states that had not shared in the risks involved. In light of the Treaty's negotiated history, conclusions made are that the nature of the sharing has not yet been determined; that such must await a subsequent separate treaty negotiation for the governing international regime when exploitation 'is about to become feasible', an eventuality perhaps 30 or more years from now; that in the interim, there is no moratorium on exploitation and states may authorize its governmental and nongovernmental entities to undertake exploitation of the moon's resources. (Author)

A81-36428 # Solar power satellites - Framework for an international cooperative agreement. S. Gorove (Mississippi, University, University, Miss.). In: Colloquium on The Law of Outer Space, 23rd, Tokyo, Japan, September 21-28, 1980, Proceedings.

New York, American Institute of Aeronautics and Astronautics, Inc., 1981, p. 165-168.

The exploitation of energy by solar power satellites (SPS) would necessitate the establishment of an international regime to govern its use of this energy. International cooperative agreements, involving the research and development of SPS, would require an initial framework of possible substantive provisions. As circumstances vary from country to country, changes in or the exclusion of certain provisions may be required, and some provisions may prove more suitable for bilateral or trilateral agreements rather than broader or near global arrangements. The framework of such an agreement would include the objectives and purposes of the agreement, its contacts and cooperative activities, the methods it will employ for information exchange and implementation of its goals, cost and the availability of funds, a force majeure, a reference to domestic laws, and some closing provisions.

J.F.

A81-36435 # Emerging patterns of a private international space law regime - Evolutionary or revolutionary. J. T. Stewart, Jr. In: Colloquium on The Law of Outer Space, 23rd, Tokyo, Japan, September 21-28, 1980, Proceedings.

New York, American Institute of Aeronautics and Astronautics, Inc., 1981, p. 201-208, 89 refs.

The launching of a recoverable space vehicle is seen as increasing the prospects for private enterprise in space. Attention is called to the fact that thus far space law has been concerned primarily with the rights and obligations of individual states. Possibilities for the development of a legal regime encompassing private space activity are discussed. International civil aviation legal regimes are seen as possible models for future space law. It is concluded that whichever path is taken, space law must balance national and multinational concerns with the rights and aspirations of private individuals and enterprises.

C.R.

A81-36869 * Spacelab utilization for future optics technology and applications. C. E. De Sanctis (NASA, Marshall Space Flight Center, Spacelab Program Office, Huntsville, Ala.). In: Management of optics; Proceedings of the Seminar, Huntsville, Ala., October 1, 2, 1980.

Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers, 1981, p. 61-68, 13 refs.

During the timeframe from 1980 to the year 2000, optics technology and applications experiments will require spacecraft that yield the maximum benefit at minimum cost. Current NASA plans include Spacelab, Power Extension Package (PEP), 25 kW Power System (PS), and a Science Applications and Space Platform (SASP), to satisfy the user needs in low earth orbit (LEO) and geosynchronous orbit (GEO). The purpose of this paper is to acquaint the optics technology user with NASA planning applicable to his future needs. This paper identifies current NASA concepts, including Spacelab hardware, that can be utilized to achieve a broad spectrum of optics scientific and application missions. Evolving configurations of Spacelab hardware elements will be shown that can be utilized as an orbital test platform in LEO and GEO.

(Author)

A81-44372 * Avenues and incentives for commercial use of a low-g environment. R. L. Brown and L. K. Zoller (NASA, Marshall Space Flight Center, Materials Processing in Space Projects Office, Huntsville, AL). In: Material and process applications - Land, sea, air, space; Proceedings of the Twenty-sixth National Symposium and Exhibition, Los Angeles, CA, April 28-30, 1981.

Azusa, CA, Society for the Advancement of Material and Process Engineering, 1981, p. 564-577.

The processing of materials in a low-gravity (low-g) or micro-gravity environment is investigated by NASA for scientific and commercial utilization, and process and product development. The elimination of gravity is shown to create unique materials, and improve ground-based processes, such as convection, sedimentation, buoyancy, and containerless processing. Commercial applications are discussed, including the manufacturing of silicon ribbon, turbine blades, and various pharmaceuticals in space. Commercial incentives and needs are also discussed, including the technical exchange agreement, in which NASA and a company agree to cooperate in the

conduct and analysis of research programs. In addition to establishing and demonstrating scientific and technological precepts for analyzing and using low-g environments, NASA is establishing legal and management mechanisms to share cost and risk of early commercial ventures.

D.L.G.

A81-44635 Commercial operations in space - 1980-2000; Proceedings of the Eighteenth Goddard Memorial Symposium, Washington, DC, March 27, 28, 1980. Symposium sponsored by AAS, AIAA, AMA, et al. Edited by J. L. McLucas (Communications Satellite Corp., Washington, DC) and C. Sheffield (Earth Satellite Corp., Washington, DC). San Diego, CA, American Astronautical Society (Science and Technology Series, Volume 51); Univelt, Inc., 1981. 211 p. \$30.

The need to revitalize American industry is considered along with questions of space industrialization, materials science and engineering in space, materials engineering in space, space power systems, earth resources, commercial launch operations, research opportunities, and international opportunities. Attention is given to the Space Shuttle power extension package, the orbital transfer of large space structures with nuclear electric rockets, a satellite power system overview of system studies and critical technology, electric orbit transfer vehicles, the mixed-mode principle and advanced chemical rocket engine concepts, crop reporting from space, the Space Industrialization Act and the government role in the commercialization of space, the airlines in the 80's and 90's, approaches to private sector involvement with government in technology development, innovation of space technology through joint endeavors between NASA and private industry, and the economic and political climate for exploitation of space riches.

G.R.

A81-44638 Space Industrialization Act and the government role in the commercialization of space. D. E. Cassidy (U.S. House of Representatives, Washington, DC). In: Commercial operations in space - 1980-2000; Proceedings of the Eighteenth Goddard Memorial Symposium, Washington, DC, March 27, 28, 1980.

San Diego, CA, American Astronautical Society; Univelt, Inc., 1981, p. 119-122. (AAS 80-076)

The 'Space Industrialization Act' (H. R. 2337) is a new legislative initiative which can have substantial impact on commercial use of space and future launch operations. The paper describes the bill and discusses some of the considerations which led to its present formulation.

(Author)

A81-46233 Industry in space - Private sector involvement. P. M. Maughan and D. J. Burnett (COMSAT General Corp., Washington, DC). *American Astronautical Society, Goddard Memorial Symposium on International Space Technical Applications, 19th, Arlington, VA, Mar. 26, 27, 1981, Paper 81-052.* 10 p.

It is pointed out that the commercial application of space based technology has not kept pace with general advances related to space technology and space exploration. Steps are, therefore, discussed which must be taken to revitalize the civilian space program and to foster the commercial development and application of space technology. Cooperative programs, joint endeavors, and other similar ventures involving both Government funding and private capital must be applied to research and development activities formulated with a view towards commercial application of the resulting technology. Several established joint Government and industry research and development projects provide the framework to implement larger research and development space missions. This framework coupled with the availability of venture capital should provide the impetus for a new era of civilian space activity.

G.R.

A81-47336 L-Sat - A new example of European and transatlantic industrial cooperation. L. Blonstein (British Aerospace Public, Ltd., Co., Space and Communications Div., Stevenage, Herts., England). *International Astronautical Federation, International Astronautical Congress, 32nd, Rome, Italy, Sept. 6-12, 1981, Paper 81-77.* 13 p.

The formation of the industrial teams established to develop the early ESA telecommunications programs is described. Attention is also given to the way in which the teams have changed as new programs have materialized, leading to the changes in emphasis dictated by the new international relationships in the L-Sat program.

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The satellites discussed are the Orbital Test Satellite (OTS), the European Communications Satellite (ECS), the Maritime ECS, and the Large European Satellite. The principal European contractors in the OTS program are listed, as are the U.S. suppliers in the OTS program, the principal suppliers in the ECS program, the principal suppliers in the MARECS program, and the principal system contractors in the L-Sat program. C.R.

A81-48871 **Proposals for ESA activities in the 1980's.** E. Quistgaard (ESA, Paris, France). *British Interplanetary Society, Journal (Space Chronicle)*, vol. 34, Oct. 1981, p. 444-455.*

The principles underlying the proposed 10-year plan for the European Space Agency are outlined. These are ESA's role as an R&D organization, the need to involve user communities at all stages of projects, the need to ensure that ESA projects are complementary to national projects, and the help to be given to European industry to increase its competitiveness in certain advanced technologies. Special attention is given to the difference between the amount allocated for R&D in the space field by Europe and that allocated by the United States. C.R.

A81-49631 **Essential features of Intelsat - Applications for the future.** D. M. Leive. (*Symposium on Space Law in Perspective, University of Mississippi, University, MS, Apr. 21, 1980.*) *Journal of Space Law*, vol. 9, Spring-Fall 1981, p. 45-51.

International cooperative activities in space are increasing and will require a variety of institutional forms, mechanisms, and approaches. This paper examines some concepts concerning the ways in which these activities can be organized; particular reference is made to Intelsat experience. Attention is given to the timing of institutional arrangements, the combination of political and technical elements, management, finance and control, and technology transfer. B.J.

A81-49633 * **The Space Shuttle in perspective.** S. N. Hosenball (NASA, Washington, DC). (*Symposium on Space Law in Perspective, University of Mississippi, University, MS, Apr. 21, 1980.*) *Journal of Space Law*, vol. 9, Spring-Fall 1981, p. 69-75. 7 refs.

Commercial aspects of the Space Shuttle are examined, with attention given to charges to users, schedule of launches and reimbursement, kinds of payload and their selection, NASA authority, space allocation, and risk, liability, and insurance. It is concluded that insurance to reduce the risk, incentives that NASA is willing to make available to U.S. industry, and the demonstrated willingness of industry and the financial community to invest their funds in space ventures indicate that the new Shuttle capabilities will exponentially increase commercial activities in space during the 1980s. B.J.

N81-11005# Joint Publications Research Service, Arlington, Va.

NEW MEASURES IN FAVOR OF INNOVATION

In its West Europe Rept.: Sci. and Technol., No. 4 (JPRS-74613) 21 Nov. 1979 p 79-84 refs Transl. into ENGLISH from *Le Progress Technique* (Paris), no. 14, 1979 p 7-9

Avail: NTIS HC A06/MF A01

The functions of French governmental agencies which aid in stimulating technological innovation are described. Technology transfer, financial aid, technology assessment, and management duties are outlined. M.G.

N81-11022# Federal Aviation Administration, Atlantic City, N.J. **SUMMARY OF FEDERAL AVIATION ADMINISTRATION RESPONSES TO NATIONAL TRANSPORTATION SAFETY BOARD SAFETY RECOMMENDATIONS** Quarterly Report, Apr. - Jun. 1980

J. R. Harrison et al Jul. 1980 167 p (AD-A089971: FAA-ASF-80-2: ASF-300) Avail: NTIS HC A08/MF A01 CSCL 01/2

This report contains NTSB recommendations and all FAA responses to Board recommendations that were delivered to the Board during the applicable quarter. In addition, the report includes NTSB requests and FAA responses concerning reconsiderations, status reports, and followup actions. The table of contents for this report reflects only those NTSB recommendations which are still open pending FAA action (i.e., those that have not been designated as 'closed' by the NTSB as a result of acceptable

action). Accordingly, the table of contents may reflect a number of multiple recommendations (example: A-80-5 through 7), but background material is included only for those recommendations which remain in an 'open' status. Background information for those recommendations which have been closed is available in FAA headquarters files. GRA

N81-11231# Committee on Commerce, Science, and Transportation (U. S. Senate).

AUTOMOBILE FUEL ECONOMY AMENDMENTS OF 1979 Washington GPO 1980 99 p Hearing on S. 1583, S. 2010 and S. 2035 before the Comm. on Com., Sci., and Transportation, 96th Congr., 2nd Sess., 23 Jan. 1980 (GPO-58-783) Avail: Committee on Commerce, Science, and Transportation

The Senate hearings before the Committee on Commerce, Science, and Transportation concerning amendments to the Motor Vehicle Information and Cost Savings Act are presented. Two of the amendments hold promise of added employment opportunity, or job preservation in some segments of the automobile industry. One amendment provides added flexibility for industry planning, which may serve to reduce the cost of compliance with fuel economy standards. Another amendment eliminates several provisions of fuel economy regulation from a sector of the automobile industry wherein experience has shown that such regulation is nonproductive. M.G.

N81-11929# Institute for Defense Analyses, Arlington, Va. Technical Information Services Office.

HOW TO GET IT: A GUIDE TO DEFENSE-RELATED INFORMATION RESOURCES, REVISED Final Report

Oct. 1980 494 p refs (Contract MDA903-79-C-0320) (AD-A090000: IDA-P-1500: DTIC-TR-80/6: IDA/HO-80-22551) Avail: NTIS HC A21/MF A01 CSCL 05/2

This guide is intended for all who have to identify or acquire government published or sponsored documents, maps, patents, specifications or standards and other resources of interest to the defense community. The entries are arranged alphabetically, in a single list, by document type, source, acronym, series designation, or short title. Each entry consists of an identification of the item and detailed acquisition information such as source, order forms to use, cost, where indexed, and telephone numbers for additional information. A bibliography is included. GRA

N81-11941# Advisory Group for Aerospace Research and Development, Neuilly-Sur-Seine (France).

PATENTS: AN INFORMATION RESOURCE

Sep. 1980 144 p refs Lecture held at Munich, 13-14 Oct. 1980 and at Delft, Netherlands, 16-17 Oct. 1980 (AGARD-LS-112) Avail: NTIS HC A07/MF A01

Patents, an important part of the total spectrum of scientific and technical information, are often overlooked by the information community and the scientific and technical community. These communities must be more aware of the importance of patents to the research, development, and engineering efforts in each country. The wide range of applications for information from patents and the methods that can be used for acquiring that information are emphasized. Methods used for indexing and classifying are discussed, the various available abstracting services are compared, and techniques for searching including automated systems are described.

N81-11942# British Library, London (England).

THE PLACE OF PATENTS IN THE FIELD OF SCIENTIFIC AND TECHNICAL INFORMATION

Michael W. Hill *In* AGARD Patents: An Inform. Resource Sep. 1980 6 p refs

Avail: NTIS HC A07/MF A01

The history of patents for inventions and printed patent specifications is briefly sketched. The usefulness of patent information to research and development, industry, and commerce is indicated. The ways and means of storing and retrieving such information is also discussed. E.D.K.

N81-11943# Commissariat a l'Energie Atomique, Gif-sur-Yvette (France).

THE CASE FOR USING PATENT DOCUMENTATION (ITS UNIQUE CONTENT, ILLUSTRATIONS OF ITS APPLICA-

TION)

Maurice G. Lenoir /In AGARD Patents: An Inform. Resource
Sep. 1980 22 p refs In ENGLISH and FRENCH

Avail: NTIS HC A07/MF A01

The information contained in patents is largely exclusive and yet, also offers qualities and characteristics enabling one to reach conclusions and make decisions which the usual technical documentation material does not always permit. The advantages users are likely to derive from this type of information is outlined. E.D.K.

N81-11944# General Electric Co., Philadelphia, Pa.

CORPORATE MANAGEMENT OF PATENTS: ROLE OF THE INDUSTRIAL LIBRARIAN

Larry Chasen /In AGARD Patents: An Inform. Resource Sep. 1980 21 p refs

Avail: NTIS HC A07/MF A01

The librarian, who is seldom the direct user of patents, should become knowledgeable in the rich resources of patent data. Technology transfer can be accomplished by the engineer and scientist having the complete picture which the librarian offers in response to a search request. Major library schools were questioned on whether courses in patent information are part of the curriculum requirements of a special librarian. The other survey is directed to several dozen major industrial libraries in the United States on patent handling and management. The results of these surveys are given. Although there are over 30 patent depositories in the United States, the average research librarian does not make complete use of these depositories. In some cases, the survey indicated they were unaware of these data sources. Several key patents supported by library research are described. On line retrieval systems where patent license data is offered by NASA and DTIC are an example of sources available to the aerospace librarian. A forecast of how libraries and special libraries will retrieve patents and patent applications before the next century commences is presented. E.D.K.

N81-11945# Patent and Trademark Office, Washington, D. C.
TECHNOLOGY ASSESSMENT: A TOOL FOR EXPLOITING PATENTS

Alfred C. Marmor /In AGARD Patents: An Inform. Resource Sep. 1980 25 p ref

Avail: NTIS HC A07/MF A01

Patent document collections, chronologically arranged and technically categorized, represent unique records of technological change. Continuously generated and catalogued, patent literature can be drawn upon as valuable input to technology assessment processes, both from a current and a historical perspective. Comprehensive patent information packages can be developed and tailored to benefit corporate strategists, policy analysts, educators, entrepreneurs, future innovators and the like. The recently established Technology Assessment and Forecast Program has helped, through computerized manipulation of patent bibliographic and classification data, to expand and facilitate the use of patent information in this way. They can profile the patent-active corporations and government organizations in the field, and identify national origin of the technology. Patenting by selected corporations may be reviewed to explore the depth and range of their technological activity. E.D.K.

N81-11946# Naval Material Command, Washington, D. C.

TECHNOLOGY TRANSFER: LICENSING GOVERNMENT INVENTIONS TO INDUSTRY

Sherman Gee /In AGARD Patents: An Inform. Resource Sep. 1980 14 p refs

Avail: NTIS HC A07/MF A01

Invention technology constitutes a sizeable portion of the science and technology base in the United States, but in the public domain it is underutilized. Only a small fraction of government inventions are licensed by industry. In order to stimulate greater utilization and licensing of government inventions, government agencies are becoming more disposed towards granting exclusive licenses under certain conditions. In order to develop better insight into government efforts to promote private sector licensing of government inventions, the licensing activities of the Department of the Navy and the National Technical Information Service are highlighted. More licensing of government inventions by industry expedites the flow of technology from the public to private sector. Close cooperation between the licensing and technology transfer communities is desired to help

accelerate the rate of government inventions licensing and to improve the chances for technology transfer success. E.D.K.

N81-11947# British Library, London (England).

LIBRARY NETWORKS IN WESTERN EUROPE AND NORTH AMERICA

Michael W. Hill /In AGARD Patents: An Inform. Resource Sep. 1980 6 p refs

Avail: NTIS HC A07/MF A01

In most, if not all, the member countries of NATO, the National Patent Office is the most obvious place to go to when wishing to use patent documents for information purposes. In the Search Room, or the Library, or in a combination of the two - arrangements vary from one country to another - facilities are provided for members of the public (meaning anyone other than a Patent Office Official) to conduct searches for themselves. In several countries, however, there are also in some major towns and cities libraries which hold collections of patent literature and which also are open to anyone who cares to use them. A summary of the available library resources in Denmark, France, Germany, the United Kingdom, and the United States of America is included. E.D.K.

N81-11948# Deutsches Patentamt, Munich (West Germany).
DISSEMINATION OF PATENT INFORMATION THROUGH OFFICIAL SERVICES AND CORRESPONDING RESOURCES IN EUROPE (SEEN THROUGH THE EYES OF A PATENT OFFICE OFFICIAL)

Rudolf Schiffels /In AGARD Patents: An Inform. Resource Sep. 1980 8 p

Avail: NTIS HC A07/MF A01

Reasons for dissemination needs of patent information are discussed. The different means of disseminating patent information are by making patent documentations available, through additional consulting services for researchers, and by additional search aids. The different kinds of users of such information are analyzed, including existing and potential users. The role of official services in patent information dissemination is described. E.D.K.

N81-11949# Centre for Scientific and Technical Information and Documentation TNO, Delft (Netherlands).

THE ROLE AND POSSIBLE ROLE OF OFFICIAL SERVICES IN THE DISSEMINATION OF PATENT INFORMATION

J. W. Plevier /In AGARD Patents: An Inform. Resource Sep. 1980 6 p refs

Avail: NTIS HC A07/MF A01

Patent offices are considered as organizations which have available a source of well organized information and a large staff of highly specialized technical people with a high level of experience in dealing with information and information retrieval systems. These human and material resources are taken as a starting point for a discussion of a number of activities which might meet some of the information needs of society at large and industry in particular. Some of the items discussed are: study of the performance of retrieval systems; patent statistics and trend analysis; scouting activities; and making available patent information in a comprehensible form for nonpatent specialists. E.D.K.

N81-11950# British Library, London (England).

COMMERCIAL ABSTRACTING AND INDEXING SERVICES, PRINTED AND ON-LINE

D. Greenwood and Michael W. Hill /In AGARD Patents: An Inform. Resource Sep. 1980 11 p

Avail: NTIS HC A07/MF A01

On-line computer systems provide a simple and versatile method for fulfilling the needs of people working in the patent information field. Access to commercial files held in various computers in the US and Europe can now be obtained relatively easily through international communications networks, and there is no doubt that the number of available files will increase. Information workers are nowadays quite used to this technology: it has become a common-place and those who wish to search for patents information can find a number of data bases designed to meet their needs. E.D.K.

N81-11951# British Library, London (England).

PATENT INFORMATION: LOOKING AHEAD

Michael W. Hill /In AGARD Patents: An Inform. Resource Sep. 1980 4 p refs

09 LEGISLATION

Avail: NTIS HC A07/MF A01

A great deal of progress was made due to the work of ICIREPAT and WIPO. Commercial operations provide a wealth of detailed abstracting services covering most of the important subject areas. Methods of dealing with patent information were strengthened, and a number of other on-line and printed services are now available. E.D.K.

N81-12010# Air Force Materials Lab., Wright-Patterson AFB, Ohio.

AIR FORCE TECHNICAL OBJECTIVE DOCUMENT FY 1981

Sidney O. Davis Dec. 1979 30 p Supersedes AFML-TR-78-195

(AD-A089709; AFML-TR-79-4222; AFML-TR-78-195) Avail: NTIS HC A03/MF A01 CSCL 15/3

This technical objective document was prepared by the Materials Laboratory and describes the materials technology areas for meeting future Air Force operational needs. The six technology areas encompass the full spectrum of materials capabilities required for future aircraft, missile, space, and electronic systems: thermal protection materials; aerospace structural materials; aerospace propulsion materials, fluid, lubricant, and elastomeric materials; protective coatings and materials, and electromagnetic windows and electronics. Presented for each TA is the general objective, specific goals, technical approaches, and a Laboratory TA focal point who can facilitate face-to-face discussions with Laboratory engineers and scientists. GRA

N81-12047# Aerospace Corp., El Segundo, Calif.

COMMUTER AIR CARRIER LOAN GUARANTEE STUDY Final Report

F. William Belina Jan. 1980 79 p refs

(Contract DOT-FA79WAI-010)

(AD-A090615; FAA-AVP-80-1)

Avail: NTIS

HC A05/MF A01 CSCL 05/3

The Airline Deregulation Act of 1978 made commuter air carriers eligible for Government guaranteed loans for the purchase of aircraft. The Federal Aviation Administration is charged with responsibility for administering the program. As an aid to determining commuter eligibility for guarantees and because publicly available financial data on commuters is very limited, it was necessary to assemble information from a number of sources such as the Civil Aeronautics Board, State Aviation Commissions, and interviews with commuter management and loan offers of financial institutions. Data and information are provided concerning (1) purchase price and operating costs of commuter type aircraft (2) current aircraft acquisition practices, typical loan terms and historical financial performance (3) current credit-worthiness standards established by the financial community and (4) financial viability and ability of commuters to meet those standards. GRA

N81-12555# Committee on Interstate and Foreign Commerce (U. S. House).

PRIORITY ENERGY PROJECT ACT OF 1979

Washington GPO 1980 253 p refs Hearings on H. R. 4499, H. R. 4573, and H. R. 4862 before the Comm. on Interstate and Foreign Com., 96th Congr., 1st Sess., 18 and 20 Jul. 1979

(GPO-58-154) Avail: Subcommittee on Energy and Power

Legislation is proposed to hasten and simplify the procedure for Federal approval of nonnuclear energy facilities. Development of synthetic fuels and synthetic chemical feedstocks is stressed. S.F.

N81-12940# Committee on Appropriations (U. S. Senate).

SPACE SHUTTLE AND GALILEO MISSION

Washington GPO 1980 136 p Hearings before a Subcomm. of the Comm. on Appropriations, 96th Congr., 1st Sess., 1980 (GPO-53-938) Avail: SOD HC

Progress in the development of the space shuttle is discussed in terms of cost overruns and delays in the first manned orbital flight of the shuttle. Results of NASA's financial requirements review of the shuttle funding are presented and discussed with emphasis placed on NASA's management of the space shuttle program. The status of Spacelab activities, the status of the upper stages, thrust augmentation to enhance shuttle capability, preparations for integrated mature STS operations, and the transition from expendable launch vehicles to space shuttle are among the topics discussed. The program status and mission objectives of the Galileo program are also reviewed. Options studied when it became necessary to restructure the mission

are discussed and program modifications necessary for a 1984 launch are outlined. Estimated program costs are included.

J.M.S.

N81-12941# Committee on Science and Technology (U. S. House).

UNITED STATES CIVILIAN SPACE POLICY

Washington GPO 1980 249 p refs Hearings before the Comm. on Sci. and Technol., 96th Congr., 2d Session, no. 153, 23-24 Jul. 1980

(GPO-66-883) Avail: Subcommittee on Space Science and Applications

The wisdom of the administration's contention that there is no need to initiate new, high challenge, high visibility engineering missions in space is examined in testimony delivered and statements presented for the record. To energize the nation's space program, it is suggested that promising long range goals must be established in science, technology, and economic applications. Reliable low cost, shuttle-based transportation to orbit must be followed by a practical, reusable interorbit and lunar transportation system. Permanent research and operating bases must be built in low Earth orbit, in geosynchronous orbit, and later, on the Moon. Quantitative growth in communications and remote sensing services must be accompanied by an increased level of performance and flexibility. Continued exploration of our solar system using robot spacecraft, the exploitation of extraterrestrial resources, and the preservation of peace between the superpowers through international cooperation require further technology developments. A.R.H.

N81-12956# Office of Management and Budget, Washington, D. C.

AERONAUTICS AND SPACE REPORT OF THE PRESIDENT, 1979 ACTIVITIES

1979 119 p

Avail: NTIS HC A06/MF A01

Developments in communications, Earth resources sensing, space transportation, and space energy are summarized and the activities of NASA and the Departments of Commerce, Interior, Defense, Transportation, and Energy are delineated. Budgets for space ventures and aeronautics are tabulated. The White House fact sheet on the management of the U.S. civilian remote sensing is included along with the text of the United Nations Moon Treaty and an analysis and commentary by the Department of State. A.R.H.

N81-13806# Committee on Science and Technology (U. S. House).

TECHNICAL INFORMATION FOR CONGRESS

Washington GPO 1979 1007 p refs Presented to the Subcomm. on Sci., Res. and Technol. of the Comm. on Sci. and Technol., 96th Congr., 1st Sess., Jul. 1979 Prepared by Congressional Research Service, Library of Congress (GPO-37-443) Avail: GPO HC

The leadtime in the making of Congressional decisions on technical matters can be shortened by improving the management of technical information and by collecting, in advance, reliable, factual information on potential issues, uncolored by political controversy, and unhurried by the pressures of urgent need. Case studies are presented and analyzed to show the historical strengths and weaknesses of various congressional processes for obtaining technical advice. Selected contemporary examples of technology assessments are considered as well as the creation, testing, and prospects of the Office of Technology Assessment. A bibliography of policy oriented literature is included along with appendices showing legislation relating to technology assessment, lists of OTA publications, and brief summaries of recent assessment (to 1978). A.R.H.

N81-13808# Committee on Science and Technology (U. S. House).

GOVERNMENT AND INNOVATION: FIELD HEARINGS

Washington GPO 1980 463 p Hearings before the Subcomm. on Sci., Res. and Technol. of the Comm. on Sci. and Technol., 96th Congr., 1st Sess., no. 82, 7-8 Sep. 1979

(GPO-55-795) Avail: Subcommittee on Science, Research and Technology

Intergovernmental utilization of science and technology is discussed. Federal budget considerations for appropriations in research and development were examined. The cost of governmental technology transfer was estimated. T.M.

N81-13809# Committee on Science and Technology (U. S. House).

TECHNOLOGY TRANSFER CONFERENCE

Washington GPO 1980 215 p Hearing before the Subcomm. on Sci., Res. and Technol. of the Comm. on Sci. and Technol., 96th Congr., 1st Sess., no. 101, 30 Mar. 1979 (GPO-56-537) Avail: Subcommittee on Science, Research and Technology

Intergovernmental communication and technology sharing are discussed. The importance of information dissemination between Federal, State, and local governments was examined. Information management and its importance in general government efficiency was also examined. T.M.

N81-13935# Committee on Public Works and Transportation (U. S. House).

TESTIMONY OF JAMES J. KRAMER, ASSOCIATE ADMINISTRATOR FOR AERONAUTICS AND SPACE TECHNOLOGY, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, ACCOMPANIED BY JOHN H. ENDERS, PROJECT MANAGER, AVIATION SAFETY TECHNOLOGY OFFICE, JOHN A. PARKER, CHEMICAL RESEARCH PROJECTS OFFICE, NASA-AMES RESEARCH CENTER, AND DEMITRIUS A. KOURTIDES, CHEMICAL RESEARCH PROJECTS OFFICE, NASA-AMES RESEARCH CENTER

In its Aviation Safety: Interior Compartment Mater. 1979 p 65-158

Avail: Subcommittee on Oversight and Review CSCL 01C

The materials system development program FIREMEN (Fire Resistant Materials Engineering) is described. The program is carried out through contracts with the major aircraft manufacturers whereby they are funded to test and evaluate these advanced material systems under the real constraints of state of the art manufacturing processes, production schedules, costs, weight, and so forth. E.D.K.

N81-13937# Committee on Public Works and Transportation (U. S. House).

TESTIMONY OF A PANEL CONSISTING OF: LLOYD E. FRISBEE, VICE PRESIDENT, ENGINEERING AND OPERATIONS, LOCKHEED CALIFORNIA COMPANY; LYLE A. WRIGHT, DIRECTOR, POWERPLANT ENGINEERING, DOUGLAS AIRCRAFT COMPANY, ACCOMPANIED BY DOCTOR H. C. SCHJELDERUP, CHIEF TECHNOLOGY ENGINEER, MATERIALS AND PROCESS ENGINEERING, AND F. E. DUSKIN, SENIOR DESIGN ENGINEER, INTERIORS ENGINEERING, DOUGLAS AIRCRAFT COMPANY

In its Aviation and Safety: Interior Compartment Mater. 1979 p 298-370

Avail: Subcommittee on Oversight and Review

Lockheed has conducted programs to improve aircraft material flame resistance and develop advanced techniques for firesafety testing in coordinated programs with other airframe companies, materials suppliers, and NASA. During this time, Lockheed has had active, continuous liaison with governmental agencies to develop firesafety testing techniques, study the feasibility and trade offs for advanced aircraft fire management systems, and seek meaningful and productive areas of research and development in aircraft fire safety. Active support and participation was also maintained in technical committee work such as ASTM-F7 Committee on Aerospace Test Methods to standardize on flammability, smoke, and other combustion byproducts test techniques and to perform inter-laboratory comparison testing of flammability and smoke emission methods. Improved flammability and smoke test techniques have contributed to substantial improvements in flame resistance of aircraft interior construction material in all categories and an order of magnitude reduction in smoke emission of materials. In other words, the smoke emission was reduced by an order of 10 times in the last few years. E.D.K.

N81-13941*# Quinby (Gilbert F.), Fort Washington, Pa.
AN ASSESSMENT OF GENERAL AVIATION UTILIZATION OF ADVANCED AVIONICS TECHNOLOGY Final Report
Gilbert F. Quinby Dec. 1980 38 p
(NASA Order L-11593)
(NASA-CR-159328) Avail: NTIS HC A03/MF A01 CSCL 17G

Needs of the general aviation industry for services and facilities which might be supplied by NASA were examined. In the data collection phase, twenty-one individuals from nine manufacturing companies in general aviation were interviewed against a carefully

prepared meeting format. General aviation avionics manufacturers were credited with a high degree of technology transfer from the forcing industries such as television, automotive, and computers and a demonstrated ability to apply advanced technology such as large scale integration and microprocessors to avionics functions in an innovative and cost effective manner. The industry's traditional resistance to any unnecessary regimentation or standardization was confirmed. Industry's self sufficiency in applying advanced technology to avionics product development was amply demonstrated. NASA research capability could be supportive in areas of basic mechanics of turbulence in weather and alternative means for its sensing. Author

N81-14178# King Research, Inc., Rockville, Md.
U.S. METRIC BOARD 1979 SURVEY OF SELECTED LARGE U.S. FIRMS AND INDUSTRIES Final Report, Dec. 1979 - Jun. 1980

Lisa L. King 19 May 1980 128 p refs

(Contract MB-79-581)

(AD-A091618) Avail: NTIS HC A07/MF A01 CSCL 14/2

A mail survey of randomly chosen 202 of the 1000 largest manufacturing and mining firms, as listed by Fortune magazine, was conducted in late 1979 and early 1980. About 64 percent (112 firms) responded with useful data. Among the findings are: about 63 percent of the largest firms produce at least one metric product; about 48 percent of exported sales are of metric products; about three quarters of the firms selling metric products sell products labelled in customary and metric units (soft conversion); about half the firms selling metric products sell hard converted products (products manufactured in metric units); little corporate coordination and planning seems to accompany conversion to the metric system; about one-third of the firms see laws and reputation impeding conversion; over 50 percent see lack of customer demand as inhibiting conversion; and the most realistic time period for conversion is 10 years, the minimum time for conversion (under pressure) is three years, and the preferred time (at the firm's own pace) is eight years. GRA

N81-14424# Department of Energy, Washington, D. C. Energy Information Administration.

ENERGY INFORMATION REFERRAL DIRECTORY, SECOND QUARTER 1980

1980 161 p

(DOE/EIA-0205/80-2Q) Avail: NTIS HC A08/MF A01

The Directory, which includes organizational charts and an index of building locations, summarizes information and referral services for the following: business and labor affairs; consumer affairs; education affairs; international affairs; public affairs; information services; energy information; energy policy and legislation; regulation; energy conservation; environment; coal; petroleum; natural gas; electric power; renewable energy sources; oil shale. S.F.

N81-14926# Committee on Appropriations (U. S. Senate).
DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT, AND CERTAIN INDEPENDENT AGENCIES APPROPRIATIONS, FISCAL YEAR 1981, PART 2

Washington GPO 1980 1298 p Hearings on H. R. 7631 before the Comm. on Appropriations 96th Congr., 2nd Sess., 2-3, 18, 24 Apr. and 1-2, 15-16 May 1980

(GPO-62-143) Avail: SOD HC

Testimony delivered in support of 1981 budget requests are presented for the National Commission on Air Quality, the American Battle Monuments Commission, cemetery expenses of the Department of the Army, the Federal Home Loan Bank Board, National Institute of Building Sciences, the Federal Emergency Management Agency, the National Aeronautics and Space Administration, the Department of Housing and Urban Development and the Department of the Treasury's Office of Revenue Sharing. The \$5.5 billion request for NASA is examined with regard to the President's anti-inflation policy and with emphasis on the cost and performance of space shuttle in comparison to expendables. The impact on the space science program of a \$39.8 million reduction in appropriations, the status of the thematic mapper and LANDSAT satellites, and the possibility of private sector operation of remote sensing activities are considered. A.R.H.

N81-14929# Battelle Pacific Northwest Labs., Richland, Wash.
CONCEPTUAL FRAMEWORK FOR DESCRIBING SELECTED URBAN AND COMMUNITY IMPACTS OF FEDERAL ENERGY POLICIES

09 LEGISLATION

F. A. Morris, A. A. Marcus, and D. Keller Jun. 1980 122 p refs Prepared in cooperation with Battelle Human Affairs Research Center, Seattle

(Contract DE-AC06-76RL-01830)

(PNL-3492) Avail: NTIS HC A06/MF A01

Analysis of the impact of a particular policy requires the following: identifying the policy and its effects (as estimated by others), isolating any effects that themselves constitute an urban and community impact, identifying any effects that change the value of determinants, and describing the impact with reference to the new values of determinants. Three impacts addressed were neighborhood stability, housing availability, and quality and availability of public services. For each, a definition and measure for the impact were specified; its principal determinants were identified; how the casual model can be used to estimate impacts by applying it to three illustrative Federal policies (domestic oil price decontrol, building energy performance standards, and increased Federal aid for mass transit) is demonstrated. DOE

N81-16945# Oak Ridge National Lab., Tenn. Technical Publications Dept.

DEVELOPING A COMPUTERIZED TEXT-MANAGEMENT SYSTEM - THE ORNL EXPERIENCE

James David Mason 1980 9 p

(Contract W-7405-eng-26)

(CONF-801113-4) Avail: NTIS HC A02/MF A01

A high speed third generation phototypesetter was developed at the Oak Ridge National Laboratory. Reasons for the development of the system were reviewed with particular emphasis on the need for publishing an ever increasing number of technical documents. The computer system's design is described and is broken into four major parts: training, word processing, editing, and composition. T.M.

N81-16952# Committee on Science and Technology (U. S. House).

POSTURE HEARINGS (NASA AND FAA)

Washington GPO 1980 110 p Hearing before the Comm. on Sci. and Technol., 96th Congr., 2nd Sess., no. 112. 29 Jan. 1980

(GPO-65-265) Avail: Committee on Science and Technology

Highlights of NASA activities in the 1960's and 1970's are assessed and plans for the 1980's are examined in the light of the President's proposed NASA budget of \$5.737 billion for fiscal year 1981 and a supplemental fiscal year 1980 approximation of \$300 million for space shuttle development. Planning for other programs, in addition to the space transportation system, is described. The status of the FAA engineering and developing program is also reviewed. Difficulties in maintaining adequate staffing are discussed. A.R.H.

N81-16953# Committee on Science and Technology (U. S. House).

NASA AUTHORIZATION, 1981

Washington GPO 1980 204 p Index for Hearings on H. R. 6413 before the Comm. on Sci. and Technol., 96th Congr., 2nd Sess., no. 158, for v. 1-5

(GPO-71-290) Avail: Committee on Science and Technology

A subject and name index is provided for testimony delivered and statements received in support of NASA's request for funding for research and development, program management and construction of facilities. A.R.H.

N81-16954*# Jet Propulsion Lab., California Inst. of Tech., Pasadena.

THE RULES IMPLEMENTING SECTIONS 201 AND 210 OF THE PUBLIC UTILITY REGULATORY POLICIES ACT OF 1978: A REGULATORY HISTORY

Robert N. Danziger 15 Sep. 1980 184 p

(Contract NAS7-100; EX-76-A-29-1012)

(NASA-CR-163900; DOE/JPL-1012-48; JPL-Pub-80-64) Avail: NTIS HC A09/MF A01 CSCL 05D

The act provides that utilities must purchase power for qualifying producers of electricity at nondiscriminatory rates. It exempts private generators from virtually all state and federal utility regulation. Pertinent reference material is provided. T.M.

N81-16956# Committee on Science and Technology (U. S. House).

MUNICIPAL SOLID WASTE TO ENERGY ACT OF 1979

Washington GPO 1980 220 p refs Hearings on S. 1934

before the Subcomm. on Energy Conserv. and Supply of the Comm. on Energy and Nat. Resources, 96th Congr., 2nd Sess. 27-28 Feb. 1980

(GPO-60-684; Publ-96-99) Avail: Subcommittee on Energy Conservation and Supply

A bill is discussed which is designed to promote the construction and operation of facilities for solid waste utilization. Among its provisions is a price support loan program for municipal solid waste to energy systems. Grants in the amount of \$12 million are authorized for states and local subdivisions, to evaluate the feasibility of various resource recovery alternatives in given communities. A.R.H.

N81-17620# National Technical Information Service, Springfield, Va.

ENERGY POLICY AND RESEARCH PLANNING. CITATIONS FROM THE NTIS DATA BASE Progress Report, Oct. 1977 - Sep. 1980

Audrey S. Hundemann Sep. 1980 260 p Supersedes

NTIS/PS-79/1069 and NTIS/PS-78/0962

(PB81-800112; NTIS/PS-79/1069; NTIS/PS-78/0962) Avail: NTIS HC \$30.00/MF \$30.00 CSCL 10A

Citations relative to planning for future U.S. energy needs on both national and state government levels are presented. The history and development of national and state legislation and regulations, Project Independence studies, and assessment of the effects of deregulation are included. Technical, economic, and environmental considerations in energy planning are also covered. This updated bibliography contains 254 citations, 77 of which are new entries to the previous edition. T.M.

N81-17940# Committee on Science and Technology (U. S. House).

THE GOVERNMENT-UNIVERSITY ACCOUNTABILITY RELATIONSHIP IN THE FIELD OF SCIENTIFIC RESEARCH

Washington GPO 1980 254 p Hearing before the Subcomm. on Sci., Res. and Technol. of the Comm. on Sci. and Technol., 96th Congr., 2nd Sess., No. 110. 24 Mar. 1980

(GPO-61-323) Avail: Subcommittee on Science, Research and Technology

The financial management of Federal aid programs was reviewed. Uniform administrative requirements for grants in aid to state and local governments were discussed. Cost principles for educational institutions were examined. Coordinating indirect cost rates, audit, and audit follow up at educational institutions was described. Special emphasis was placed on cost sharing on Federal research. T.M.

N81-17955# Committee on Science and Technology (U. S. House).

NASA AUTHORIZATION, 1982 (PROGRAM REVIEW), VOLUME 2

Washington GPO 1980 513 p Hearings before the Subcomm. on Space Sci. and Appl. of the Comm. on Sci. and Technol., 96th Congr., 2nd Sess., no. 164. 16-18 Sep. 1980

(GPO-69-646) Avail: Subcommittee on Space Science and Applications

The problems of cost, performance, and schedule which can affect the NASA budget program performance were examined. Changes in the fiscal year 1981 budget plan are discussed. Special emphasis was placed on the schedule of the Space Transportation System flight 1 and problems it has encountered. T.M.

N81-18489# Committee on Science and Technology (U. S. House).

REGIONAL SOLAR ENERGY CENTERS AND THE SOLAR ENERGY RESEARCH INSTITUTE

Washington GPO 1980 27 p Presented to the Subcomm. on Energy Develop. and Appl. of the Comm. on Sci. and Technol., 96th Congr., 2nd Sess., Jul. 1980

(GPO-57-234) Avail: Subcommittee on Energy Development and Applications

Hearings focused on the management methods and operations of the Regional Solar Energy Centers and the Solar Energy Research Institute. Serious questions were raised concerning the appropriate mission for the RSEC's and potential conflicts and overlap with existing programs were investigated. Economic factors were examined that affect funding policies. T.M.

N81-18931# Policy and Management Associates, Inc., Boston, Mass.

THE EFFECT OF ECONOMIC REGULATION ON FUELUSE EFFICIENCY IN PRIVATE TRUCKING-OPERATIONS Final Report

Apr. 1980 105 p refs

(Contract DOT-OS-90023)

(PB81-114753; DOT-P-50-37) Avail: NTIS HC A06/MF A01 CSCL 05C

Private trucking operations are a substantial component of the motor carrier industry. The description of private carriage covers: magnitude and growth; reasons for use; traffic characteristics; fleet operations; relations with other modes; and the effect of the regulatory system on private trucking operations. An analysis of how regulations affect private trucking fuel use efficiency and an attempt to forecast the effects of regulatory change are included. GRA

N81-19351# United States Metric Board, Arlington, Va.
FIVE YEARS AFTER THE METRIC CONVERSION ACT, WHERE DO WE STAND? SURVEY OF LARGE US MANUFACTURING AND MINING FIRMS (THE FORTUNE MAGAZINE 1000)

Dec. 1980 14 p

(AD-A095116) Avail: NTIS HC A02/MF A01 CSCL 05/1

A mail survey of randomly chosen 202 of the 1000 largest manufacturing and mining firms, as listed by Fortune magazine, was conducted in late 1979 and early 1980. About 64 percent (112 firms) responded with useful data. This Executive Summary draws on the full report (U.S. Metric Board 1979 Survey of Selected Large U.S. Firms and Industries, Lisa King, King Research, Inc., May 1980; AD-A-091-618) and provides an overview of the study's findings. Some selected findings are: (1) about 30 percent of the large firms produce at least one hard metric product; (2) about 48 percent of foreign sales are of metric products; (3) little corporate coordination and planning seems to accompany conversion to the metric system; (4) about one-third of the firms see laws and regulations as impeding conversion; (5) over 50 percent see lack of customers demand as inhibiting conversion; (6) the most realistic time period for conversion is 10 years, the minimum time for conversion (under pressure) is three years, and the preferred time (at the firm's own pace) is eight years. GRA

N81-19962* National Aeronautics and Space Administration, Washington, D. C.

NASA PATENT ABSTRACTS BIBLIOGRAPHY: A CONTINUING BIBLIOGRAPHY, SUPPLEMENT 18, JANUARY 1981

Jan. 1981 50 p

(NASA-SP-7039(18)) Avail: NTIS HC \$8.50 CSCL 05B

Abstracts are cited for 120 patents and patent applications for patents introduced into the NASA scientific system during the period of July 1980 through December 1980. Each entry consists of a citation, an abstract, and in most cases, a key illustration selected from the patent or application for patent. M.G.

N81-19963* National Aeronautics and Space Administration, Washington, D. C.

NASA PATENT ABSTRACTS BIBLIOGRAPHY. A CONTINUING BIBLIOGRAPHY. SECTION 2: INDEXES

Jan. 1981 726 p

(NASA-SP-7039(18)) Avail: NTIS HC \$12.50 CSCL 05B

Entries for 3900 patents and patent applications citations for the period May 1980 through December 1980 are listed. Indexes for subject, invention, source, number, and accession number are included. J.M.S.

N81-19976# Office of Science and Technology, Washington, D. C.

CONSOLIDATION OF FEDERAL SCIENTIFIC AND TECHNOLOGICAL ACTIVITIES

May 1980 104 p refs

(PB81-132250) Avail: NTIS HC A06/MF A01 CSCL 05A

Six of the principal alternatives for major consolidation of Federal scientific and technical activities are set forth, as well as some of the variations. A discussion of the arguments for and against consolidation with respect to six of the functions that need to be effectively performed in support of federal scientific and technological activities is presented. E.D.K.

N81-20046# Lockheed-Georgia Co., Marietta. Engineering Systems Analysis Div.

ISSUES OF COMMONALITY. VOLUME 2: ISSUE ANALYSIS Final Report

W. T. Garrett, J. R. Atcheson, D. L. Bouguet, W. A. French, C. R. Needles, R. P. Tuttle, and S. M. Williams Dec. 1980 145 p refs

(Contract F33615-78-C-0115)

(AD-A095418; LG80ER0013-VOL-2)

Avail: NTIS

HC A07/MF A01 CSCL 01/3

Since 1974, when the Military Airlift Command proposed the concept of commonality between civil and military transport airplanes, the Air Force has sponsored various studies on the technical feasibility, cost effectiveness, and design trade-offs for a large, advanced technology, transport aircraft. Originally designated C-XX, but now known as the ACMA (Advanced Civil/Military Aircraft), such aircraft would have the potential to meet not only the strategic military airlift needs of the United States at reduced investment, operating, and support costs; but would also provide the worldwide civilian cargo industry with more efficient airfreight capabilities. There are many important institutional issues related to the acceptance of a joint civil/military development concept due to the numerous and significant interactions between government (both military and domestic agencies), in industry (both manufacturers and air carriers), and international aviation interests. These interactions, and the potential conflicts, are the central focus of the Issues of Commonality Study. This report summarizes the work performed to date. GRA

N81-20047# Lockheed-Georgia Co., Marietta. Engineering Systems Analysis Div.

ISSUES OF COMMONALITY. VOLUME 1: EXECUTIVE SUMMARY Final Report

W. T. Garrett, J. R. Atcheson, D. L. Bouguet, W. A. French, C. R. Needles, R. P. Tuttle, and S. M. Williams Dec. 1980 20 p (Contract F33615-78-C-0115)

(AD-A095417; LG80ER0013-VOL-1)

Avail: NTIS

HC A02/MF A01 CSCL 01/3

The Issues of Commonality Study examines the significant institutional issues related to the acceptance of a concept for the development of a new large cargo aircraft. The proposed aircraft, referred to as the ACMA (Advanced Civil/Military Aircraft), nee C-XX is conceived as an advanced technology transport with the potential for fulfilling both the U.S. need for military airlift and the worldwide need for commercial airfreight in the 1990s and beyond. There are many political and socio-economic considerations to be addressed when formulating a program involving government and industry participants with their particular and diverse interests. This study focuses on these interfaces and potential problem areas and examines four issues thought to be of more immediate concern to the successful initiation of a joint civilian/military venture. These issues are: establishing the commercial need, U.S. and international; development of a financial planning concept; energy considerations that may impact the program; and impact of engine development/acquisition. GRA

N81-20969* National Aeronautics and Space Administration, Washington, D. C.

RESPONSE TO SPUTNIK: THE CREATION OF NASA

In its Beyond the Atmosphere: Early Years of Space Sci. 1980 p 87-99

Avail: NTIS MF A01; SOD HC \$11.00 CSCL 05A

The merger of academic, industrial, and political forces in the United States after the launching of Sputnik 1 is described. The decisions and governmental policies that lead to the formation of NASA are summarized. The question of whether NASA would be a military of civilian operation is discussed and the importance of the decision to have NASA as a civilian organization is emphasized. T.M.

N81-20971* National Aeronautics and Space Administration, Washington, D. C.

EXTERNAL RELATIONS

In its Beyond the Atmosphere: Early Years of Space Sci. 1980 p 116-132

Avail: NTIS MF A01; SOD HC \$11.00 CSCL 05A

Mechanisms for a variety of external relations were developed by NASA for programs that clearly would involve more people outside NASA than in, and in which numerous other agencies

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would have strong interests. The relation between NASA and the Department of Defense, the Academy of Science, and the President's Science Advisory Committee are summarized. The publication of results and technology transfer between NASA and universities and other scientific societies are discussed. T.M.

N81-20980* National Aeronautics and Space Administration, Washington, D. C.

INTERNATIONAL TIES

In its Beyond the Atmosphere: Early Years of Space Sci. 1980 p 299-318 (For primary document see N81-20962 11-88)
Avail: NTIS MF A01; SOD HC \$11.00 CSCL 05A

A historical overview of NASA's participation in international activities in space science is given. The Ariel, Alouette, Isis, and San Marco satellite programs are addressed along with sounding rocket and ground based projects. Relations and cooperation with the Soviet Union are also discussed. M.G.

N81-21007* National Bureau of Standards, Washington, D.C.
DIMENSIONS/NBS. VOLUME 64, NO. 8, OCTOBER 1980
Monthly Report, October 1980

Oct. 1980 32 p refs

(PB81-133654; NBS/DIM-64/8)

Avail: NTIS

HC A03/MF A01 CSCL 14B

Short summaries of major technical developments, highlights of work in progress and major speeches and statements by Bureau management are presented as well as a listing of NBS publications. Articles in this issue are: A Look at Federal Office Automation, S. Radack; Safer Practice Makes Perfect, K. Kuo; Electrical Wiring: Staying on the Safe Side, G. Porter; I-C Test Structures for Random Faults, M. Baum; Temperature Reference Materials Available, SRM; Degradation of Solar Absorber Coatings, L. Masters; Test of Radiation Exposure Calculation for Reactor Pressure Vessels, E. McGarry. GRA

N81-21948* Stanford Univ., Calif. Program in Information Policy.

IMPROVING NASA'S TECHNOLOGY TRANSFER PROCESS THROUGH INCREASED SCREENING AND EVALUATION IN THE INFORMATION DISSEMINATION PROGRAM

Horstfried Laepple Oct. 1979 58 p refs

(Contract NASw-3204)

(NASA-CR-164176; Rept-28) Avail: NTIS HC A04/MF A01 CSCL 05B

The current status of NASA's technology transfer system can be improved if the technology transfer process is better understood. This understanding will only be gained if a detailed knowledge about factors generally influencing technology transfer is developed, and particularly those factors affecting technology transfer from government R and D agencies to industry. Secondary utilization of aerospace technology is made more difficult because it depends on a transfer process which crosses established organizational lines of authority and which is outside well understood patterns of technical applications. In the absence of a sound theory about technology transfer and because of the limited capability of government agencies to explore industry's needs, a team approach to screening and evaluation of NASA generated technologies is proposed which calls for NASA, and other organizations of the private and public sectors which influence the transfer of NASA generated technology, to participate in a screening and evaluation process to determine the commercial feasibility of a wide range of technical applications.

A.R.H.

N81-21956* Rice Univ., Houston, Tex.

TRENDS IN LIABILITY AFFECTING TECHNICAL WRITERS

L. P. Driskill *In* NASA. Langley Research Center Tech. Writing: Past, Present and Future Mar. 1981 p 51-62 refs

Avail: NTIS HC A04/MF A01 CSCL 05B

Legal background is provided and several liability prevention programs are described. The basic rules that govern the duty of manufacturers or sellers to warn of product-related dangers are summarized and include who must warn, who must be warned, and what dangers must be explained. The future responsibilities of technical writers are discussed. T.M.

N81-21959* Michigan Univ., Ann Arbor. Dept. of Humanities.

ASSUMING RESPONSIBILITY: AN AFFECTIVE OBJECTIVE IN TEACHING TECHNICAL WRITING

J. C. Mathes *In* NASA. Langley Research Center Tech. Writing:

Past, Present and Future Mar. 1981 p 75-78 refs (For primary Avail: NTIS HC A04/MF A01 CSCL 05B)

A two step process by which a technical writer assumes responsibility for the consequences of a report is discussed. First, the professional must formulate the conclusions and recommendations implicit in his or her technical analysis. Second, the professional must ensure that these are acted upon as necessary. Examples are presented which show the consequences of technical writers failing to assume responsibility for reports. T.M.

N81-21964* McLean Research Center, Inc., Va.

SOURCING AND ORGANIZING THE DATA BASE FOR COMPUTER FOREIGN AVAILABILITY Final Report

Robert I. Widder, Donald L. Farrar, and Victoria I. Young Jul. 1980 74 p

(PB81-125346; MRC-80-2040; OEA-FA-3) Avail: NTIS HC A04/MF A01 CSCL 05B

Knowledgeable U.S. government sources of foreign availability information in the Washington area, the information that they can provide, and transfer mechanisms for access by the Office of Export Administration are examined. Primary data sources for future use are listed. A scheme of organizing OEA's existing foreign availability information is suggested. Finally, specific mechanisms by which OEA could access the principal information sources are listed. It is found that they will probably be specific to the source organization and the nature of the data request. GRA

N81-21970* EG and G Washington Analytical Services Center, Inc., Rockville, Md. Technology Assessment and Analysis Dept.

FOREIGN AVAILABILITY OF TECHNOLOGY: DEFINITION AND STRUCTURING OF DATA BASE, VOLUME 1 Final Report

Oct. 1980 92 p

(PB81-125049; WASC-TR-S340-0001-F-Vol-1; OEA-FA-1) Avail: NTIS HC A05/MF A01 CSCL 05B

The information needs of potential users (in both the Executive and Legislative branches of the government) for data on the foreign availability of products or technologies are identified. A decision-tree approach that permits the available data to be systematically utilized to the desired degree of specificity to access the availability of equivalent technologies overseas is progressed. Sources of the necessary data are identified and appraised. Data availability is explored systematically in four technical areas: chemicals and materials; transportation; telecommunications; and avionics; navigation and related naval equipment. GRA

N81-21971* EG and G Washington Analytical Services Center, Inc., Rockville, Md. Technology Assessment and Analysis Dept.

FOREIGN AVAILABILITY OF TECHNOLOGY: DEFINITION AND STRUCTURING OF DATA BASE. VOLUME 2: APPENDICES, PART A AND B Final Report

Oct. 1980 306 p refs

(PB81-125056; WASC-TR-S340-0001-A-Vol-2; OEA-FA-1A) Avail: NTIS HC A14/MF A01 CSCL 05B

The requirements and structure of a data base for information on foreign products and technology that are controlled from export from the United States are addressed. It is concluded that adequate data are available to develop a foreign availability data base. The information that was referenced in Volume 1 is appended, including the detailed foreign availability assessments. J.M.S.

N81-21995* National Aeronautics and Space Administration, Washington, D. C.

A CATALOG OF NASA SPECIAL PUBLICATIONS

1981 110 p

(NASA-SP-449) Avail: NTIS HC A06/MF A01 CSCL 05B

A list of all of the special publications released by NASA are presented. The list includes scientific and technical books covering a wide variety of topics, including much of the agencies research and development work, its full range of space exploration programs, its work in advancing aeronautics technology, and many associated historical and managerial efforts. A total of 1200 titles are presented. R.C.T.

N81-22510* Midwest Research Inst., Golden, Colo. Solar Energy Research Inst.

MAKING SOLAR LAWS WORK: A STUDY OF STATE SOLAR ENERGY INCENTIVES. VOLUME 1: EXECUTIVE SUMMARY

J. D. Roessner Nov. 1980 39 p refs
(Contract DE-AC02-77CH-00178)
(SERI/TR-722-583-Vol-1) Avail: NTIS HC A03/MF A01

The results of a research investigation of solar financial and research, demonstration, and development incentive programs in 18 states are summarized. The investigation focuses upon implementation - the organization and administrative processes required to convert a law into a viable program. Results indicate that four conditions are common to successful implementation of both types of incentive programs: the opportunity to use solar energy as a heating source; characteristics of the agency selected to complement the law; involvement of outside groups in program implementation; and the specificity of guidance given to those responsible for implementation. Other conditions specific to the implementation of each type of program are discussed as well as the implications of these findings for state and federal policy makers. DOE

N81-22968* National Aeronautics and Space Administration, Washington, D. C.

NASA'S UNIVERSITY PROGRAM ACTIVE PROJECTS. FISCAL YEAR 1980

1980 325 p
(NASA-TM-82387) Avail: NTIS HC A14/MF A01 CSCL 05A

Data on projects active during fiscal year 1980 are organized alphabetically by state. The appendix includes a cross-reference indexed by field of science and engineering. S.F.

N81-22969* National Academy of Sciences - National Research Council, Washington, D. C.

NASA'S AERONAUTICS RESEARCH AND TECHNOLOGY BASE Final Report

Apr. 1979 52 p
(Contract NASw-2342)
(NASA-CR-164195; PB81-134686) Avail: NTIS HC A04/MF A01 CSCL 05A

NASA's research technology base in aeronautics is assessed in terms of: (1) US aeronautical technology needs and requirements in the future; (2) objectives of the aeronautics program; (3) magnitude and scope of the program; and (4) research and technology performed by NASA and other research organizations. S.F.

N81-22979* Kansas Univ., Lawrence. Museum of Natural History.

DEVELOPMENT OF A CENTER FOR BIOSYSTEMATICS RESOURCES Summary Report, 1 Nov. 1979 - 31 Oct. 1980

Stephen R. Edwards Nov. 1980 9 p
(Contract DE-AC02-79EV-10026)
(DOE/EV-10026/2) Avail: NTIS HC A02/MF A01

A Center for Biosystematics Resources is developed to provide a centralized source of information regarding the biological expertise available in the academic/museum community; and the federal and state regulations concerning the acquisition, transport, and possession of biological specimens. The heart of the Center is a series of computer assisted data bases which contain information on biologists and their areas of expertise, biological collections, annotated federal regulations, and federal and state controlled species lists. The purpose of this three year contract with the Department of Energy is to continue the updating and revision of the original data bases, make the information they contain readily available to the Department of Energy, other government agencies, the private sector, and the academic community; and to achieve financial independence by the end of the three year period. DOE

N81-23432* National Aeronautics and Space Administration, Langley Research Center, Hampton, Va.

NASA METROLOGY AND CALIBRATION, 1980 Final Report

Washington NASA 10 Apr. 1981 153 p ref Proceedings of the 4th Ann. Workshop, Hampton, Va., 21-23 Oct. 1980
(NASA-CP-2174; L-14380) Avail: NTIS HC A08/MF A01 CSCL 13B

The proceedings of the fourth annual NASA Metrology and Calibration Workshop are presented. This workshop covered (1) review and assessment of NASA metrology and calibration activities by NASA Headquarters, (2) results of audits by the Office of Inspector General, (3) review of a proposed NASA

Equipment Management System, (4) current and planned field center activities, (5) National Bureau of Standards (NBS) calibration services for NASA, (6) review of NBS's Precision Measurement and Test Equipment Project activities, (7) NASA instrument loan pool operations at two centers, (8) mobile cart calibration systems at two centers, (9) calibration intervals and decals, (10) NASA Calibration Capabilities Catalog, and (11) development of plans and objectives for FY 1981. Several papers in this proceedings are slide presentations only. Author

N81-23952* Department of Energy, Washington, D. C. Energy Information Administration.

ENERGY INFORMATION REFERRAL DIRECTORY, FOURTH QUARTER 1980

1980 170 p
(DOE/EIA-0205(80-4Q)) Avail: NTIS HC A08/MF A01

This directory provides the name, address, and phone number of various energy information offices within the DOE and other Federal agencies. The arrangement is topical. Each entry presents the name of the office, the address, the main contact person, and a summary of the office's primary activities. A comprehensive subject index to the entries is provided as well as a name index. In addition, the publication contains several appendices in which DOE Regional Energy Information Centers, state energy offices, DOE commercialization-resource managers, and DOE research and development and field facilities are listed. Charts illustrate the DOE and the EIA organizational structure. DOE

N81-23971* Committee on Science and Technology (U. S. House).

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION AUTHORIZATION ACT, 1982

Washington GPO 1981 13 p A bill referred to the Comm. on Sci. and Technol., 97th Congr., 1st Sess., 23 Jan. 1981
(H-Rept-97-32) Avail: US Capitol, House Document Room

A bill introduced in the House of Representatives to authorize appropriations to the National Aeronautics and Space Administration for research and development, construction of facilities, research and program management, and other purposes is documented. M.G.

N81-23972* Committee on Science and Technology (U. S. House).

AUTHORIZING APPROPRIATIONS TO THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION FOR FISCAL YEAR 1982

Washington GPO 1981 228 p Rept. to accompany H.R. 1257 presented by the Comm. on Sci. and Technol. at the 97th Congr., 1st Sess., 8 May 1981
(H-Rept-97-32) Avail: US Capitol, House Document Room

Committee actions, including language amendments, are presented along with committee views of the bill authorizing funds for NASA program management, research and development, and construction of facilities. A.R.H.

N81-23973* Committee on Commerce, Science, and Transportation (U. S. Senate).

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION AUTHORIZATION ACT, 1982

Washington GPO 1981 12 p A bill referred to the Comm. on Com., Sci., and Transportation, 97th Congr., 1st Sess., 4 May 1981
(S-Rept-97-100) Avail: US Capitol, Senate Document Room

Funding is proposed for a variety of NASA and NASA-related research and development projects and programs. Allocations proposed include: space and space vehicles; planetary exploration; test facilities; physics and astronomy; and others. S.F.

N81-24038* Federal Aviation Administration, Washington, D.C. Office of Aviation Safety.

SUMMARY OF FEDERAL AVIATION ADMINISTRATION RESPONSE TO NATIONAL TRANSPORTATION SAFETY BOARD SAFETY RECOMMENDATIONS Quarterly Report, Jul. - Sep. 1980

J. R. Harrison Oct. 1980 254 p
(AD-A098096; FAA-ASF-81-1) Avail: NTIS HC A12/MF A01 CSCL 01/2

This report contains NTSB recommendations and all FAA responses to Board recommendations that were delivered to the Board during the applicable quarter. In addition, the report includes

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NTSB requests and FAA responses concerning reconsiderations, status reports, and followup actions. The Table of Contents for this report reflects only those NTSB recommendations which are still open pending FAA action (i.e., those that have not been designated as 'Closed' by the NTSB as a result of acceptable action). Accordingly, the Table of Contents may reflect a number of multiple recommendations (example: A-80-27 through 29), but background material is included only for those recommendations which remain in an 'Open' status. Background information for those recommendations which have been closed is available in FAA headquarters files. Author (GRA)

N81-24986* National Aeronautics and Space Administration, Washington, D. C.

NASA PATENT ABSTRACTS BIBLIOGRAPHY: A CONTINUING BIBLIOGRAPHY. SECTION 1: ABSTRACTS, SUPPLEMENT 17

Jul. 1980 59 p
(NASA-SP-7039(17)) Avail: NTIS HC \$8.50 CSCL 05B

Abstracts are cited for 150 patents and applications for patents introduced into the NASA scientific and technical information system during the period January 1980 through June 1980. Each entry consists of a citation, an abstract, and in most cases, a key illustration selected from the patent or application for patent. A.R.H.

N81-24990# Office of Management and Budget, Washington, D. C.

FEDERAL INFORMATION COLLECTION: AGENCY ACTIONS ON COMMISSION ON FEDERAL PAPERWORK RECOMMENDATIONS. VOLUME 1: MULTI-AGENCY RECOMMENDATIONS

Dec. 1980 71 p
(PB81-158941) Avail: NTIS HC A04/MF A01 CSCL 05B

Congress created the Commission on Federal Paperwork to study the Federal Government's burgeoning information gathering activities and to recommend changes in the Government policies and practices that impact on the paperwork burden. The legislation that established the Commission also required monitoring and reporting on executive branch agency responses to the Commission's recommendations. This publication and others in this series are in response to that requirement. GRA

N81-24991# Committee on Commerce, Science, and Transportation (U. S. Senate).

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION ACT, 1982

Washington GPO 1981 58 p Rept. to accompany S. 1098 presented by the Comm. on Com., Sci., and Transportation at the 97th Congr., 1st Sess., 15 May 1981
(S-Rept-97-100; GPO-79-010) Avail: US Capitol. Senate Document Room

Appropriations proposed by the Senate Committee after consideration of NASA's request of 6,725,700,000 in funding for fiscal year 1982 and the President's suggested reduction of \$603,500,000 in that agency's budget are presented. The revised budget authorizes expenditures of \$5,000,000,000 for research and development, \$104,400,000 for the construction of facilities, and \$1,118,100,000 for research and program development. A.R.H.

N81-24993# Committee on Science and Technology (U. S. House).

UNITED STATES CIVILIAN SPACE POLICY

Darrell R. Branscome Washington GPO 1981 48 p Presented by the Subcomm. on Space Sci. and Appl. of the Comm. on Sci. and Technol., 97th Congr., 1st Sess., Apr. 1981
(GPO-70-213) Avail: Subcommittee on Space Science and Applications CSCL 05A

In order to augment public support for space goals, the Administration is asked to make a financial commitment to space engineering initiatives including: (1) a manned space operating base in low Earth orbit; (2) a Mars sample return mission; (3) a Global Resource Information System. S.F.

N81-25298# Federal Communications Commission, Washington, D. C. Office of Plans and Policy.

POLICIES FOR REGULATION OF DIRECT BROADCAST SATELLITES Final Staff Report

Florence O. Setzer, Bruce A. Franca, and Nina W. Cornell Sep. 1980 131 p refs

(PB81-151201) Avail: NTIS HC A07/MF A01 CSCL 17B

The potential market for satellite to home television broadcasting was examined and recommendations were made to the FCC concerning appropriate regulatory policies for direct broadcast satellites (DBS) for the period following the 1983 Regional Administrative Radio Conference (RARC). It is concluded that many substitutes for DBS will be available in the market for subscription video programming. Either conventional broadcast regulation, which assumes scarcity of channels, nor common carrier regulation, which assumes monopoly power will be appropriate. The report recommends several functions the Commission should perform because of its spectrum allocation responsibilities, but recommends that the Commission make no rules concerning compatibility, signal quality, ownership of receiving equipment, program content, prices, service offerings, or control of channels. GRA

N81-25873# Committee on Appropriations (U. S. House). **DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT. INDEPENDENT AGENCIES APPROPRIATIONS FOR 1982. PART 7**

Washington GPO 1981 1216 p Hearings before Subcomm. of the Comm. on Appropriations, 97th Congr., 1st Sess., 6 May 1981

(GPO-79-791) Avail: Committee on Appropriations

The impact of the President's revised budget on NASA program management, research and development, and construction of facilities is examined. The reconstitution of the International Polar Mission using two European spacecraft, integration of the Centaur into the shuttle to meet the 1985 Galileo project launch, and the termination of various agency capabilities are considered. Although the budget contains no new flight starts or initiatives for fiscal year 1982, it does represent a balanced program in space sciences, applications, aeronautics, and space technology, and supports the final development phase of the space shuttle, production of the orbiter fleet, and development of upper stage capability for planned planetary and other high energy missions. A.R.H.

N81-25874# Committee on Commerce, Science, and Transportation (U. S. Senate).

OFFICE OF SCIENCE AND TECHNOLOGY POLICY

Washington GPO 1980 75 p Hearing before the Subcomm. on Sci., Technol., and Space of the Comm. on Com., Sci., and Transportation, 96th Congr., 2nd Sess., 19 Sep. 1980

(GPO-68-403) Avail: Subcommittee on Science, Technology, and Space

Problems faced by the industrial and academic communities with regard to scientific research and development are explored. Incentives for technological innovation and the role of science and technology in international relations are stressed. S.F.

N81-26028*# National Academy of Sciences - National Research Council, Washington, D. C. Assembly of Engineering.

NASA'S ROLE IN AERONAUTICS: A WORKSHOP. VOLUME 1: SUMMARY

1981 71 p refs Workshop held at Woods Hole, Mass., 27 Jul. - 2 Aug. 1980 7 Vol.
(Contracts NASw-3455; NASw-2342)

(NASA-CR-164513) Avail: NTIS HC A04/MF A01 CSCL 01B

The state of the U.S. aeronautic industry and progressive changes in national priorities as reflected in federal unified budget outlays are reviewed as well as the contribution of NACA and the character and substance of U.S. aeronautical research under NASA. Eight possible roles for the future defined by NASA are examined and the extent to which the agency should carry out these activities is considered. The roles include: (1) national facilities expertise; (2) flight sciences research; (3) generic technology evolution; (4) vehicle class evolution; (5) technology demonstration; (6) prototype development; (7) technology validation; and (8) operations feasibility. How NASA's roles varies in the areas of military aviation, general aviation, transport aircraft aeronautics, rotorcraft aeronautics, engineering education, information dissemination, and cooperation with other organizations and agencies is discussed with regard to research in aerodynamics; structures and materials; propulsion; electronics and avionics; vehicle operations; and human engineering. A.R.H.

N81-26029*# National Academy of Sciences - National Research Council, Washington, D. C. Assembly of Engineering.

**NASA'S ROLE IN AERONAUTICS: A WORKSHOP
VOLUME 2: MILITARY AVIATION**

1981 39 p refs Workshop held in Woods Hole, Mass.,
27 Jul. - 2 Aug. 1980 7 Vol.
(Contracts NASw-3455; NASw-2342)
(NASA-CR-164514) Avail: NTIS HC A03/MF A01 CSCI
01B

While the National Aeronautics and Space Act of 1958 makes DOD primarily responsible for military aeronautics, it stipulates a role for NASA in providing direct and indirect support for national defense. The existing role of NASA in support of military aeronautics is working well and is well coordinated. The role needs only to be kept effective and then improved by increasing its responsiveness to changing military requirements and by the selective application of additional people. Funding resources should also be made available to NASA for research. Specific roles that NASA could or should play were examined. It was determined that the most important areas for this support are in basic research, generic technology evolution, and facility support in the fields of aerodynamics, structures and materials, and propulsion. A.R.H.

N81-26030* National Academy of Sciences - National Research Council, Washington, D. C. Assembly of Engineering.

**NASA'S ROLE IN AERONAUTICS: A WORKSHOP
VOLUME 3: TRANSPORT AIRCRAFT**

1981 39 p refs Workshop held at Woods Hole, Mass.,
27 Jul. - 2 Aug. 1980 7 Vol.
(Contracts NASw-3455; NASw-2342)
(NASA-CR-164515) Avail: NTIS HC A03/MF A01 CSCI
01B

Segments of the spectrum of research and development activities that clearly must be within the purview of NASA in order for U.S. transport aircraft manufacturing and operating industries to succeed and to continue to make important contributions to the nation's wellbeing were examined. National facilities and expertise; basic research, and the evolution of generic and vehicle class technologies were determined to be the areas in which NASA has an essential role in transport aircraft aeronautics. A.R.H.

N81-26031* National Academy of Sciences - National Research Council, Washington, D. C. Assembly of Engineering.

**NASA'S ROLE IN AERONAUTICS: A WORKSHOP.
VOLUME 4: GENERAL AVIATION**

1981 36 p refs Workshop held at Woods Hole, Mass.,
27 Jul. - 2 Aug. 1980 7 Vol.
(Contracts NASw-3455; NASw-2342)
(NASA-CR-164516) Avail: NTIS HC A03/MF A01 CSCI
01B

A substantially improved flow of new technology is imperative if the general aviation industry is to maintain a strong world position. Although NASA is the most eminently suited entity available to carry out the necessary research and technology development effort because of its facilities, expertise, and endorsement by the aircraft industry, less than 3% of its aeronautical R&T budget is devoted to general aviation aeronautics. It is recommended that (1) a technology program, particularly one that focuses on improving fuel efficiency and safety, be aggressively pursued by NASA; (2) NASA be assigned the role of leading basic research technology effort in general aviation up through technology demonstration; (3) a strategic plan be developed by NASA, in cooperation with the industry, and implemented in time for the 1982 budget cycle; and (4) a NASA R&T budget be allocated for general aviation adequate to support the proposed plan. A.R.H.

N81-26032* National Academy of Sciences - National Research Council, Washington, D. C. Assembly of Engineering.

**NASA'S ROLE IN AERONAUTICS: A WORKSHOP.
VOLUME 5: ROTORCRAFT**

1981 39 p refs Workshop held at Woods Hole, Mass.,
27 Jul. - 2 Aug. 1980 7 Vol.
(Contracts NASw-3455; NASw-2342)
(NASA-CR-164517) Avail: NTIS HC A03/MF A01 CSCI
01B

The potential roles for NASA relating to rotorcraft are reviewed. The agency's participation is delineated for each role, a rationale is provided, the current level of activity is summarized, and suggestions are given for the kinds of research still needed.

In examining opportunities for the most beneficial deployment of its resources, NASA should consider societal benefits as well as the military and civil markets in formulating the role it can play to support the development of a stronger rotorcraft technology base. A.R.H.

N81-26033* National Academy of Sciences - National Research Council, Washington, D. C. Assembly of Engineering.

**NASA'S ROLE IN AERONAUTICS: A WORKSHOP.
VOLUME 6: AERONAUTICAL RESEARCH**

1981 25 p refs Workshop held at Woods Hole, Mass.,
27 Jul. - 2 Aug. 1980 7 Vol.
(Contracts NASw-3455; NASw-2342)
(NASA-CR-164518) Avail: NTIS HC A02/MF A01 CSCI
01B

While each aspect of its aeronautical technology program is important to the current preeminence of the United States in aeronautics, the most essential contributions of NASA derive from its research. Successes and challenges in NASA's efforts to improve civil and military aviation are discussed for the following areas: turbulence, noise, supercritical aerodynamics, computational aerodynamics, fuels, high temperature materials, composite materials, single crystal components, powder metallurgy, and flight controls. Spin offs to engineering and other sciences explored include NASTRAN, lubricants, and composites. A.R.H.

N81-26034* National Academy of Sciences - National Research Council, Washington, D. C. Assembly of Engineering.

**NASA'S ROLE IN AERONAUTICS: A WORKSHOP.
VOLUME 7: BACKGROUND PAPERS**

1981 185 p refs Workshop held at Woods Hole, Mass.,
27 Jul. - Aug. 1980 7 Vol.
(Contract NASw-3455)

(NASA-CR-164519) Avail: NTIS HC A09/MF A01 CSCI 01B

The nature and implications of the current state of U.S. aviation in a world setting are examined as well as their significance for NASA's role in the nation's aeronautical future. The outlook for the 1980's is examined from the point of view of legislation, economics and finance; petroleum; manpower, metallic materials, general aviation; military aviation; transport aircraft developments; and helicopters. Possible NASA assistance to DOD and the FAA is examined and the evolution of NASA and NASA in aeronautics and of NASA's aeronautics capabilities are described. A.R.H.

N81-26976# Office of Management and Budget, Washington, D. C.

INFORMATION COLLECTION BUDGET OF THE UNITED STATES GOVERNMENT, FISCAL YEAR 1981

1981 94 p
(PB81-152357) Avail: NTIS HC A05/MF A01 CSCI 05A

Paperwork and red tape were studied for 2 years by the commission on federal paperwork. The commission recommended that the federal government manage reporting and related information functions as a resource, like other resources used in operating federal programs resulting in the information collection budget (ICB). Agencies that impose over 95% of executive branch paperwork on the public are required to prepare comprehensive proposals in the form of a budget for all such reporting in the upcoming fiscal year. The budget is expressed in the amount of the public's time that agencies propose to require to fill out reports and keep records. An allowance was approved for each agency of the total amount of reporting and recordkeeping burden. GRA

N81-26977# Michigan State Legislature, Lansing.
SCIENCE AND THE LEGISLATIVE PROCESS (A REPORT SUBMITTED TO JOINT COMMITTEE ON SCIENCE AND TECHNOLOGY, SCR 246)

Richard L. McAnaw 1980 96 p refs
(Grant NSF ISP-77-25882)

(PB81-158495; NSF/RA-800352) Avail: NTIS
HC A05/MF A01 CSCI 05A

An investigation to determine whether an improved science information mechanism is needed by the Michigan Legislature is reported. The study surveyed experiences in other states, assessing current mechanisms for delivering information on science related issues of public policy. Issues with science components and the sources utilized for obtaining scientific and technological information were evaluated. A proposal emerged which would establish the Legislature Office of Science Advisor

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(LOSA) to serve the science information needs of the two chambers in a bipartisan manner. LOSA would be under the jurisdiction of a joint committee on science and technology and administered by the Senate Fiscal Agency. GRA

N81-27067# Federal Aviation Administration, Washington, D.C. Office of Aviation Safety.

SUMMARY OF FEDERAL AVIATION ADMINISTRATION RESPONSES TO NATIONAL TRANSPORTATION SAFETY BOARD SAFETY RECOMMENDATIONS Quarterly Report, Oct. - Dec. 1980

J. R. Harrison Jan. 1981 264 p

(AD-A099585; FAA-ASF-81-2)

Avail: NTIS

HC A12/MF A01 CSCL 01/2

This report contains NTSB recommendations and all FAA responses to Board recommendations that were delivered to the Board during the applicable quarter. In addition, the report includes NTSB requests and FAA responses concerning reconsiderations, status reports, and followup actions. The Table of Contents for this report reflects only those NTSB recommendations which are still open pending FAA action (i.e., those that have not been designated as 'Closed' by the NTSB as a result of acceptable action). GRA

N81-27151# Committee on Science and Technology (U. S. House).

THE SPACE INDUSTRIALIZATION ACT OF 1980

Washington GPO 1980 92 p Hearings before the Subcomm. on Space Sci. and Applications of the Comm. on Sci. and Technol., 96th Congr., 2nd Sess., No. 132, 11-12 Jun. 1980

(GPO-66-307) Avail: Subcommittee on Space Science and Applications

Issues of research and development and the role for the Federal Government in fostering and enhancing technological transfer and innovation while maintaining the integrity of the nation's free enterprise system are considered with emphasis on the proposal to establish a space industrialization corporation. This revised bill places greater emphasis on the corporation as a financing institution and specifically includes financing for space related services and related equipment and facilities. Financing would be available for space technology transfers (spinoffs) with applications for Corporation financing limited to U.S. citizens and businesses. NASA's role would be increased to assure establishment to economical space industrialization systems capabilities and to provide, on a reimbursable basis, assistance in operations and the furnishing of associated equipment and facilities, in addition to research and development and launch assistance. A.R.H.

N81-27329# Office of the Deputy Secretary of Defense, Washington, D. C.

DOD METRIC SEMINAR/WORKSHOP (1980) Final Report 23 Apr. 1981 185 p refs Workshop held at Washington, D.C., 18-20 Nov. 1980

(AD-A099780) Avail: NTIS HC A09/MF A01 CSCL 14/2

Mid-level DoD managers met to discuss defense policies, plans, problem areas, and solutions needed to implement the provisions of the U.S. Metric Act (P.L. 94-168) and DoD Directive 4120.18 Metric System of Measurement. The work proceedings presented include speeches and presentations, minutes, workshop action items, recommendations, and list of attendees. GRA

N81-27478# Frequency and Time Systems, Inc., Danvers, Mass. **GOVERNMENT AND INDUSTRY INTERACTIONS IN THE DEVELOPMENT OF CLOCK TECHNOLOGY**

Helmut Hellwig /In NASA. Goddard Space Flight Center Proc. of the 12th Ann. Precise Time and Time Interval Appl. and Planning Meeting Mar. 1981 p 253-274 refs

Avail: NTIS HC A99/MF A01 CSCL 13H

It appears likely that everyone in the time and frequency community can agree on goals to be realized through the expenditure of resources. These goals are the same as found in most fields of technology: lower cost, better performance, increased reliability, small size and lower power. Related aspects are examined in the process of clock and frequency standard development. Government and industry are reviewed in a highly interactive role. These interactions include judgements on clock performance, what kind of clock, expenditure of resources, transfer of ideas or hardware concepts from government to industry, and control of production. Successful clock development and

production requires a government/industry relationship which is characterized by long-term continuity, multidisciplinary team work, focused funding and a separation of reliability and production oriented tasks from performance improvement/research type efforts. S.F.

N81-27977# Committee on Commerce, Science, and Transportation (U. S. Senate).

NASA AUTHORIZATION FOR FISCAL YEAR 1982, PART 1

Washington GPO 1981 316 p Hearings before the Subcomm. on Sci., Technol., and Space of the Comm. on Com., Sci. and Transportation, 97th Congr., 1st Sess., 10 and 19 Mar. 1981 (GPO-77-065-Pt-1) Avail: Subcommittee on Science, Technology, and Space

Accomplishments of NASA programs, with emphasis on Voyager Project and Space Shuttle, are detailed in NASA's funding appeal. Space Telescope and the Galileo Probe are included. S.F.

N81-27978# Committee on Commerce, Science, and Transportation (U. S. Senate).

NASA AUTHORIZATION FOR FISCAL YEAR 1982, PART 2

Washington GPO 1981 430 p refs Hearings before the Subcomm. on Sci. Technol. and Space of the Comm. on Com., Sci., and Transportation, 97th Congr., 1st Sess., 25, 31 Mar. and 7 and 27 Apr. 1981

(GPO-77-290) Avail: Subcommittee on Science, Technology, and Space

The decision to modify the Centaur for integration into the space shuttle for planetary and other high energy missions is examined as well as possible launch mechanisms for the Galileo project. International cooperation in space programs is considered with emphasis on the impact of budget cuts on Spacelab program agreements and possibilities and causes for cost over-runs and schedule delays in various NASA projects are discussed in relation to original forecasts. A.R.H.

N81-28037*# NASA Scientific and Technical Information Facility, Baltimore/Washington International Airport, Md. 21240.

INDEX TO NASA NEWS RELEASES AND SPEECHES

1980 165 p Sponsored by NASA

(NASA-CR-164557) Avail: NTIS HC A08/MF A01 CSCL 05B

A listing of news releases distributed by the Office of Public Affairs, NASA Headquarters, and a selected listing of speeches given by members of the Headquarters staff during 1979 are presented. M.G.

N81-28165# Environmental Protection Agency, Washington, D.C. **TSCA AND THE PAINT AND COATINGS INDUSTRY Final Report**

Douglas G. Bannerman /In American Chemical Society The 16th Natl. Symp. on Polymers in the Serv. of Man 1980 p 148-151

Avail: NTIS HC A09/MF A01 CSCL 07/3

An inventory of close to 50,000 chemicals currently in commerce in the U.S. was published by EPA and an analytical search is underway to identify those considered hazardous to health or the environment. Chemicals found to pose an unreasonable risk are to be banned controlled in some way. To date control action was taken on polychlorinated biphenyls and chlorofluorocarbons and there are nearterm plans for asbestos. Through its premanufacture notification provisions, TSCA gives EPA the authority to screen chemicals before commercial manufacture or importation begins. Of 150 notices received to date, polymers are the largest single class of substances planned by industry for introduction into commerce. E.D.K.

N81-28303# Argonne National Lab., Ill. Energy and Environmental Systems Div.

IMPLEMENTATION PLANNING FOR INDUSTRIAL ENERGY CONSERVATION: APPROACH AND METHODOLOGY

T. G. Alston, G. Falk, P. J. Grogan, D. Katz, and J. Tatar Jan. 1981 46 p refs

(Contract W-7405-eng-38)

(ANL/CNSV-TM-55) Avail: NTIS HC A03/MF A01

Details of an industry-specific Conservation Technology Implementation Branch implementation plan is described in detail. CTIB has conducted implementation planning in the steel, pulp/paper, and agriculture/food processing industries, but in FY 1981, CTIB plans to conduct planning for the chemicals, petroleum refining, aluminum, glass, cement, and textile industries. Guide-

lines are presented for each contractor for each industry toward a common methodology in terms of approach, areas of analysis, assumptions, and reporting. The major parts of the CTIB plan are: an implementation study consisting of technology selection, market demand analysis, and policy analysis, and a plan consisting of a detailed description and schedule of future CTIB actions, followed by a recommended system for monitoring market results when the plan is implemented. DOE

N81-28525# Committee on Science and Technology (U. S. House).

OVERSIGHT: WESTERN SOLAR ENERGY ACTIVITIES

Washington GPO 1980 130 p refs Hearing before the Subcomm. on Energy Develop. and Applications of the Comm. on Sci. and Technol., 96th Congr., 2nd Sess., no. 123, 3 Jan. 1980

(GPO-63-657) Avail: Subcommittee on Energy Development and Applications

Development and commercialization of solar energy technology is discussed with regard to the case of California, which leads the other States in its encouragement of solar incentives. The operation of the Western Sun Solar Center, one of four regional solar centers of DOE with responsibility for commercialization, is assessed. S.F.

N81-28527# Committee on Science and Technology (U. S. House).

OVERSIGHT: SOLAR PHOTOVOLTAIC PROGRAM

Washington GPO 1980 164 p Hearing before the Subcomm. on Energy Develop. and Applications of the Comm. on Sci. and Technol., 96th Congr., 2nd Sess., no. 135, 29 Feb. 1980

(GPO-64-863) Avail: Subcommittee on Energy Development and Applications

Public Law 95-590, the Solar Photovoltaic Energy Systems Research Development and Demonstration Act of 1978, is reviewed, along with the Department of Energy's implementation of the 10 year photovoltaic program. Controversy settles on DOE's emphasis on research and development to the detriment of marketing development and demonstration. S.F.

N81-29032# Texas Univ. at Arlington. Center for Energy Studies.

A PRELIMINARY ANALYSIS OF THE NATURAL GAS MARKET-ORDERING PROBLEM

Robert C. Means Feb. 1981 133 p refs

(Policy-Study-15) Avail: NTIS HC A07/MF A01

Application of microeconomic analysis to the provisions of the Natural Gas Policy Act predict that partial deregulation of natural gas in 1985 will result in price discontinuity, misdirected benefits, and market raiding. The principal factual issues that must be resolved in any full assessment of this market ordering problem are considered. A.R.H.

N81-29033# Committee on Science and Technology (U. S. House).

THE 1982 NASA AUTHORIZATION, VOLUME 3

Washington GPO 1981 327 p Hearings before the Subcomm. on Transportation, Aviation and Mater. of the Comm. on Sci. and Technol., 97th Congr., 1st Sess., no. 4, 10-11, 26 Feb. and 19 Mar. 1981

(GPO-78-168-Vol-3) Avail: Subcommittee on Transportation, Aviation and Materials

Budget requests to support NASA's aeronautics program are justified. Areas covered include research in aerodynamics; propulsion; materials and structures; guidance and control; and human factors. Particular attention is given to avionics and alternative fuel technology for all vehicle classes. A.R.H.

N81-29063*# National Aeronautics and Space Administration. Lewis Research Center, Cleveland, Ohio.

AEROSPACE IN THE FUTURE

John F. McCarthy, Jr. May 1980 34 p Presented at CECON, Cleveland, 20-21 May 1980

(NASA-TM-82664; E-575) Avail: NTIS HC A03/MF A01 CSCL 05A

National research and technology trends are introduced in the environment of accelerating change. NASA and the federal budget are discussed. The U.S. energy dependence on foreign oil, the increasing oil costs, and the U.S. petroleum use by class are presented. The \$10 billion aerospace industry positive contribution to the U.S. balance of trade of 1979 is given as an indicator of the positive contribution of NASA in research to industry. The research work of the NASA Lewis Research Center in the areas of space, aeronautics, and energy is discussed as a

team effort of government, the areas of space, aeronautics, and energy is discussed as a team effort of government, industry, universities, and business to maintain U.S. world leadership in advanced technology. A.R.H.

N81-29976# Aerodyne Research, Inc., Bedford, Mass.

MM&T: TESTING OF ELECTRO-OPTIC COMPONENTS Final Report, 28 Sep. 1978 - 28 Jun. 1980

H. J. Caulfield Redstone Arsenal, Ala. Army Missile Command Feb. 1981 120 p refs

(Contract DAAK40-79-C-0275)

(AD-A101036; AD-E950142; ARI-RR-215;

DRSMI/RH-CR-81-8) Avail: NTIS HC A06/MF A01 CSCL 20/6

The contractor has studied the testing of electro-optic components with special emphasis on diamond-turned optics. The primary purpose of that study was to determine where new government initiatives could be most effective in moving this area forward. Besides an ordered list of recommended government actions, this study has resulted in an extensive survey of experts (the most extensive yet made), the largest annotated bibliography in the field, an improved form of Ronchi testing giving quantitative results, a general approach to nonconjugate interferometry, a high accuracy form of multiple-wavelength absolute distance interferometry, and a totally new approach to the generation of test holograms by computer. Author (GRA)

N81-30037# Office of the Deputy Secretary of Defense, Washington, D. C.

PROCEEDINGS OF THE DOD TECHNICAL INFORMATION CONFERENCE FOR R AND D MANAGERS

May 1981 73 p Conf. held in Washington, D.C., 16-17 Mar. 1981

(AD-A100600) Avail: NTIS HC A04/MF A01 CSCL 05/2

Approximately 90 scientists, engineers, and technical managers from Government and industry participated in the conference and workshop sessions at the National Defense University. The principal recommendations were: an OSD level technical information focal point should be designated; technical information advisory council should be appointed; a DoD technical information program plan should be developed; and the Defense Technical Information Center should be designated as a major program element. Author (GRA)

N81-30046# Battelle Pacific Northwest Labs., Richland, Wash. **ANALYSIS OF FEDERAL INCENTIVES USED TO STIMULATE ENERGY CONSUMPTION**

R. J. Cole, B. W. Cone, J. C. Emery, M. Huelshoff, D. E. Lenerz, A. Marcus, F. A. Morris, W. J. Sheppard, and P. Sommers Apr. 1981 14 p refs

(Contract DE-AC06-76RL-01830)

(PNL-3558-EX-Summ) Avail: NTIS HC A02/MF A01

Data on estimated cost of incentives used to stimulate energy consumption by incentive type and energy source are tabulated for coal, oil, gas, and electricity. It is suggested that the examination of past incentives can be useful in developing guidelines and limits for the use of incentives to stimulate consumption of solar energy. DOE

N81-31030# Committee on Science and Technology (U. S. House).

NASA AUTHORIZATION, 1982, VOLUME 4

Washington GPO 1981 1248 p Hearings before the Subcomm. on Space Sci. and Appl. of the Comm. on Sci. and Technol., 97th Congr., 1st Sess., No. 7, 28 Jan., 20, 23, 27 Feb., and 2, 4-5, 10-11 Mar. 1981

(GPO-79-432-Vol-4) Avail: Subcommittee on Space Science and Applications

Progress and accomplishments of the year are reviewed and requests for funding are examined in the areas of space sciences, shuttle related activities, space flight operations, a space applications, and aeronautics. The numerical aerodynamics simulation which will reduce the cost of aircraft design, chemical propulsion, large space structures, power systems, information systems, and the Venus Orbiting Imaging Radar spacecraft are discussed. Space processing, Spacelab payloads, and possible space shuttle configurations are also examined. A.R.H.

N81-31231# Committee on Commerce, Science, and Transportation (U. S. Senate).

AIRPORT AND AIRWAY SYSTEM DEVELOPMENT ACT OF

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1981

Washington GPO 1981 280 p Hearings on S. 508 before the Subcomm. on Aviation of the Comm. on Com., Sci., and Transportation, 97th Congr., 1st Sess., 24-25 Feb. 1981 (GPO-75-804) Avail: Subcommittee on Aviation

Legislation intended to provide for the improvement of the nation's airport and airway system is addressed. Airport development in the areas of facilities and equipment and research, engineering, and development is discussed. Safety factors are emphasized. Programs and policies which will increase the productivity of the nation, reduce government participation and involvement in regulatory matters, improve aviation safety, and maintain a strong air transportation system are proposed. J.M.S.

N81-31403# Committee on Science and Technology (U. S. House).

INDUSTRIAL INNOVATION

Washington GPO 1980 147 p refs Hearing before the Subcomm. on Sci., Res., and Technol. of the Comm. on Sci. and Technol., 96th Congr., 2nd Sess., No. 159, 21 Jul. 1980 (GPO-70-074) Avail: NTIS Avail: Subcommittee on Science, Research, and Technology

The effects of fiscal and regulatory policies on reindustrialization are highlighted. The Federal patent policy, technology transfer, high technology small business innovation, and problems such as the drug lag problem and technology trade with other countries are discussed. T.M.

N81-32082# Committee on Science and Technology (U. S. House).

NASA AUTHORIZATION, 1982, VOLUME 5

Washington GPO 1981 1322 p refs Hearings before the Subcomm. on Space Sci. and Appl. of the Comm. on Sci. and Technol., 97th Congr., 1st Sess., No. 8, 12, 17-21, 23-24 Mar. 1981 (GPO-79-550) Avail: Subcommittee on Space Science and Applications

The proposed NASA space research and energy technology program for fiscal year 1982 is presented. The specifics of the budget request are discussed. T.M.

N81-32084# Library of Congress, Washington, D. C. Copyright Office.

HOW TO INVESTIGATE THE COPYRIGHT STATUS OF A WORK

1981 8 p refs
(Circular-R22) Avail: NTIS HC A02/MF A01

The investigation of copyright status is described. The impact of the copyright act of 1976 on works published since January 1, 1978 is summarized. The duration of copyright protection, requirements for the copyright notice, and the effect of absence of the copyright notice on the status of a work are considered. Instructions for making a copyright search, and the information needed before a search can be conducted by the Copyright Office are given. J.D.H.

N81-32086*# Denver Research Inst., Colo. Program for Transfer Research and Impact Studies.

SPACE BENEFITS: THE SECONDARY APPLICATION OF AEROSPACE TECHNOLOGY IN OTHER SECTORS OF THE ECONOMY

[1981] 240 p refs
(Contract NASw-3113)
(NASA-CR-164733) Avail: NTIS HC A11/MF A01 CSDL 05A

Some 585 examples of the beneficial use of NASA aerospace technology by public and private organizations are described to demonstrate the effects of mission-oriented programs on technological progress in the United States. General observations regarding technology transfer activity are presented. Benefit cases are listed in 20 categories along with pertinent information such as communication link with NASA; the DRI transfer example file number; and individual case numbers associated with the technology and examples used; and the date of the latest contract with user organizations. Subject, organization, geographic, and field center indexes are included. A.R.H.

N81-33097# Committee on Commerce, Science, and Transportation (U. S. Senate).

NOMINATIONS: NASA

Washington GPO 1981 36 p Hearing before the Comm. on Com., Sci., and Transportation, 97th Congr., 1st Sess., 17 Jun. 1981 (GPO-81-614) Avail: Committee on Commerce, Science, and Transportation

The appointments of James M. Beggs as Administrator, and Hans M. Mark as Deputy Administrator of NASA are discussed. J.D.H.

N81-33098# Committee on Science and Technology (U. S. House).

HELIUM: ENERGY ACT OF 1980

Washington GPO 1981 387 p refs Hearing on H. R. 7336 before the Subcomm. on Energy Res. and Production, the Subcomm. on Energy Develop. and Appl. of the Comm. on Sci. and Technol., 96th Congr., 2nd Sess., No. 170, 17 Jun. 1980 (GPO-71-077) Avail: Subcommittee on Energy Research and Production

Legislation developing a helium gas conservation program is discussed. A national helium reserve of 85 billion cu ft by 1990 is sought. The Secretary of Energy is required to acquire and store helium offered for purchase, bearing all transportation and storage costs. Taxes are removed, and royalty assessment of helium gas is delayed until it is repurchased. The Government is granted the power of eminent domain to acquire helium and to operate helium extraction facilities. The Government is required to buy the helium it uses from the private market. The sale of federally owned helium is permitted only when the cost approaches the cost of extracting helium from the air. J.D.H.

N81-33292*# National Aeronautics and Space Administration. Marshall Space Flight Center, Huntsville, Ala.

AVENUES AND INCENTIVES FOR COMMERCIAL USE OF A LOW-GRAVITY ENVIRONMENT

Richard L. Brown and Lowell K. Zoller Sep. 1981 21 p
(NASA-TP-1925; M-357; LA41/LA01) Avail: NTIS HC A02/MF A01 CSDL 22A

The scientific and commercial utilization of the low-g environments for materials research and for process and product development is considered. Any products of commercial interest which necessitate processing in space will probably be low volume, high value items. To encourage the commercialization of materials processing in low-g, NASA, in parallel with establishing and demonstrating the scientific/technological precepts for analyzing and using a low-g environment, is establishing the legal and management mechanisms to share in the cost and risk of early commercial ventures, and is now working with commercial firms on a case-by basis to explore applications of this new technology to specific needs of the company. R.C.T.

N81-33367# Committee on Science and Technology (U. S. House).

NASA SPACE COMMUNICATIONS PROGRAM

Washington GPO 1981 180 p refs Hearings before the Subcomm. on Space Sci. and Appl. of the Comm. on Sci. and Technol., 97th Congr., 1st Sess., No. 17, 8-9 Jul. 1981 (GPO-83-236) Avail: Subcommittee on Space Science and Applications

The role played by NASA in the establishment of domestic satellite communications systems, and the development of technology for C-band and KU-band communication is reviewed. Research and development activities to assure the availability of adequate and affordable satellite communications beyond 1990 are examined with particular emphasis on 30/20 GHz technology. A.R.H.

N81-34099 British Library Lending Div., Boston Spa (England). LOCAL GOVERNMENT INFORMATION IN THE UNITED STATES OF AMERICA AND CANADA: REPORT OF A STUDY VISIT IN MARCH 1979

Don Kennington Aug. 1979 45 p refs
(BLL-BLRDR-5531) Avail: British Library Lending Div., Boston Spa, Engl.

Practices in the fields of documentation and information services to local government are described and compared. The publication and acquisition of information originating with local governments, specifically urban areas, and its availability for use is considered. J.D.H.

TECHNOLOGY ASSESSMENT

Includes overviews, conferences, and final reports on current technology.

A81-10914 Initial stage of reflection of a plane shock wave from a cylinder, sphere, and ellipsoid of revolution. N. I. Nosenko, N. N. Sysoev, and F. V. Shugaev. (*Akademiia Nauk SSSR, Izvestiia, Mekhanika Zhidkosti i Gaza*, vol. 15, Mar.-Apr. 1980, p. 94-100.) *Fluid Dynamics*, vol. 15, no. 2, Sept. 1980, p. 251-257. 14 refs. Translation.

The present analyses deal with the stage of regular reflection of a plane shock wave from a blunted body. At the point at which the shock wave intersects the body surface, analytical expressions are derived for the time derivative of the wave Mach number, the density and pressure derivatives, and the Mach number derivative along the wave front. The parameter distribution in the region between the reflected wave and the body surface is determined to within third-order terms.

V.P.

A81-11001 Plane steady problem of heat-conduction theory for a hyperbolic cylinder with boundary conditions of the third kind. B. A. Vasil'ev (Leningradskii Institut Sovetskoi Torgovli, Leningrad, USSR). (*Inzhenerno-Fizicheskii Zhurnal*, vol. 38, Jan. 1980, p. 150-153.) *Journal of Engineering Physics*, vol. 38, no. 1, July 1980, p. 107-109. 5 refs. Translation.

The paper examines the two-dimensional problem of heat conduction for a hyperbolic cylinder, whose surface is heated according to the Newton law. Fredholm equations of the second kind are obtained for temperature distribution on the cylinder. The equations can be efficiently solved by numerical methods and by the method of successive approximations at low values of the Biot criterion.

B.J.

A81-16758 Stability theory of the orbit-averaged Boltzmann equation. J. R. Ipser and H. E. Kandrup (Chicago, University, Chicago, Ill.). *Astrophysical Journal, Part 1*, vol. 241, Nov. 1, 1980, p. 1141-1147. 8 refs. NSF Grant No. PHY-78-24275.

Consideration is given to the relation between the thermal runaway predicted in models of the collisional evolution of stellar systems and the onset of linear instability in equilibrium solutions of the Boltzmann equation obtained by averaging over the stellar orbits. The orbit-averaged Boltzmann equation is obtained by instantaneously averaging, over orbits of fixed energy and angular momentum, the Boltzmann equation in six-dimensional phase space. The linear stability of the equation is analyzed for the case of isothermal equilibrium, and it is found that spherical equilibrium configurations confined in a box become unstable to spherical perturbations of the Boltzmann equation at the critical point for the initiation of the thermal runaway where the Boltzmann entropy ceases to be a local maximum.

A.L.W.

A81-18051 International Air Transportation Conference, New Orleans, La., April 30-May 3, 1979, Proceedings. Volumes 1 & 2. Conference sponsored by ASCE, SAE, AIAA, ICE, ATRIF, and Transportation Research Board. New York, American Society of Civil Engineers, 1979. Vol. 1, 485 p.; vol. 2, 343 p. Price of two volumes, \$59.

The conference included papers on airspace analysis in airport system planning, performance of flexible highway pavements, microwave landing systems, civic-electrical engineering interface, hedging against errors in airport forecasting, a computer program for slabs with discontinuities, and flight instrumentation for all-weather approach and landing. Also discussed were air service for small communities, helicopters for all-weather terminals, NDT techniques, airline deregulation, runway configuration management systems, and the role of aircraft separation assurance in the cockpit.

A.T.

A81-18937 Final design and performance of a two gap magnet. R. DeWitt (California, University, Livermore, Calif.). In:

Symposium on Engineering Problems of Fusion Research, 8th, San Francisco, Calif., November 13-16, 1979, Proceedings. Volume 1. Piscataway, N.J., Institute of Electrical and Electronics Engineers, Inc., 1979, p. 187-190. Contract No. W-7405-eng-48.

The basic design features of the Doublet III Neutral Beam Injection System magnet are reviewed, and performance test results are correlated with the design criteria. Consideration is given to the yoke design, coils, field shaping, energy shielding, mechanical adjustments, electrical controls, and power supply. The actual performance of the magnet during testing is found to be slightly better than designed.

V.L.

A81-21701 Summer Computer Simulation Conference, Toronto, Canada, July 16-18, 1979, Proceedings. Conference sponsored by AGU, AIAA, AMS, BMES, IMACS, IEEE, ISA, SCS, and S.H.A.R.E. Montvale, N.J., AFIPS Press, 1980. 997 p. \$30.

Topics discussed include simulation methodology, hybrid systems, simulation credibility and validation, system engineering, and simulation for training. Particular attention is given to simulation in the chemical sciences, the physical sciences, the environmental sciences, biomedical systems, the managerial and social sciences, and

B.J.

A81-21957 Performance study of air-heated packed-bed solar-energy collectors. C. B. Mishra and S. P. Sharma (Birla Institute of Technology, Mesra, India). *Energy*, (UK), vol. 6, Feb. 1981, p. 153-157. 6 refs.

A performance study of three packed-bed solar collectors for air-heating is presented. Iron chips, aluminum chips, and pebbles have been used as packing materials. It is observed that the performance of plane collectors improves appreciably by packing with blackened metallic materials. Moreover, the packed-bed collector also works nicely as a thermal storage system. Iron-chips packed-bed collectors show the best performance.

(Author)

A81-22208 Winter Simulation Conference, San Diego, Calif., December 3-5, 1979, Proceedings. Volumes 1 & 2. Conference sponsored by ACM, AIIE, IEEE, NBS, ORSA, SCS, and TIMS. Edited by H. J. Highland (New York, State University, Farmingdale, N.Y.), M. G. Spiegel (Federal Computer Performance Evaluation and Simulation Center, Washington, D.C.), and R. Shannon (Alabama, University, Huntsville, Ala.). New York, Institute of Electrical and Electronics Engineers, Inc., 1979. Vol. 1, 350 p.; vol. 2, 341 p. Price of two volumes, \$40.50.

Consideration is given to such topics as experimental design in computer simulation, computer-aided digital autopilot design and analysis, simulation of passive solar systems, simulation of an advanced inertial stabilization concept, and simulation in project management. Factor screening methods in computer simulation experiments, a simulation model for network routing, and simulation of merge junctions in a dynamically entrained automated guideway transit system are also examined.

B.J.

A81-22436 # Generation of infrared radiation in the Np0532 pulsar by Langmuir solitons (Generatsiia infrakrasnogo izlucheniia pul'sara Np0532 Lengmiurovskimi solitonami). P. G. Mamradze, G. Z. Machabeli, and G. I. Melikidze (Abastumanskaia Astrofizicheskaia Observatoriia, Mount Kanobili, Georgian SSR). *Fizika Plazmy*, vol. 6, Nov.-Dec. 1980, p. 1293-1296. 11 refs. In Russian.

A theoretical study is presented of the merging and nonlinear damping of Langmuir waves localized in a soliton in an electron-positron relativistic plasma. It is shown that such merging is possible in a pulsar magnetosphere if the charged particles have nonzero pitch angles; the excitation of cyclotron noise can lead to the appearance of pitch angles. It is suggested that infrared radiation is generated in the magnetosphere of the Np0532 pulsar as a result of such merging.

B.J.

A81-23101 * # SAM II aerosol profile measurements, Poker Flat, Alaska; July 16-19, 1979. M. P. McCormick, W. P. Chu, L. R.

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McMaster (NASA, Langley Research Center, Hampton, Va.), G. W. Grams (Georgia Institute of Technology, Atlanta, Ga.), B. M. Herman (Arizona, University, Tucson, Ariz.), T. J. Pepin (Wyoming, University, Laramie, Wyo.), P. B. Russell (SRI International, Menlo Park, Calif.), and T. J. Swisler (Systems and Applied Sciences Corp., Hampton, Va.). *Geophysical Research Letters*, vol. 8, Jan. 1981, p. 3, 4.

SAM II satellite measurements during the July 1979 Poker Flat mission, yielded an aerosol extinction coefficient of 0.0004/km at 1.0 micron wavelength, in the region of the stratospheric aerosol mixing ratio peak (12-16 km). The stratospheric aerosol optical depth for these data, calculated from the tropopause through 30 km, is approximately 0.001. These results are consistent with the average 1979 summertime values found throughout the Arctic. (Author)

A81-23111 **Equatorial anomaly in the Jovian ionosphere.** K. K. Mahajan (National Physical Laboratory of India, New Delhi, India). *Geophysical Research Letters*, vol. 8, Jan. 1981, p. 66-68. 12 refs.

It is noted that the electron concentration data from Pioneer 10 and 11 and Voyager 1 and 2 indicate the presence of an equatorial anomaly in the Jovian ionosphere, with the peak electron concentration value showing a minimum near the equator. Electron concentration measurements of Jupiter are presented. Also included is a latitudinal plot of electron concentration at heights of 2000 km and 3000 km in the Jovian atmosphere. It is noted that the Voyager 1 measurement at 1 deg N, 314 deg W corresponds to a location very near the charged particle (and thus magnetic) equator, thereby corroborating the Fountain Effect theory for the occurrence of an equatorial anomaly in the Jovian atmosphere. C.R.

A81-23161 # **CO₂ gasdynamic laser based on combustion products of C₂H₂-CO-N₂O-N₂ mixtures (CO₂-GDL na produktakh goreniia smesei C₂H₂-CO-N₂O-N₂).** N. V. Evtukhin (Akademiia Nauk SSSR, Institut Khimicheskoi Fiziki, Chernogolovka, USSR). *Kvantovaya Elektronika* (Moscow), vol. 7, Dec. 1980, p. 2635-2637. 17 refs. In Russian.

Gains are measured for a CO₂ gasdynamic laser operating in the combustion products of mixtures of the type C₂H₂-pCO-(5 + n)N₂O-mN₂. Gains of approximately 1 per micron are obtained at temperatures of about 1600 to 2000 K. It is shown that fuel blends of the type C₂H₂-3N₂O-mN₂ may be used in selectively excited gasdynamic lasers. F.G.M.

A81-24012 **Hydrogen: Production and marketing; Proceedings of the Symposium, Honolulu, Hawaii, April 2-6, 1979.** Symposium sponsored by the American Chemical Society. Edited by W. N. Smith (General Electric Co., Philadelphia, Pa.) and J. G. Santangelo (Air Products and Chemicals, Inc., Allentown, Pa.). Washington, D.C., American Chemical Society (ACS Symposium Series, No. 116), 1980. 437 p. \$36.50.

The studies included in this volume provide an overview of hydrogen research and development and examine the problems of industrial technology and economics of hydrogen production, commercial distribution and safety, the potential of advanced hydrogen technologies, and applications. Papers are presented on the hydrogen production from partial oxidation of residual fuel oil, coal gasification for hydrogen manufacture, production and application of electrolytic hydrogen, and hydrogen from fuel desulfurization. V.L.

A81-24014 **Hydrogen technology - An overview.** F. J. Salzano, A. Mezzina, M. Beller, G. Strickland, and S. Srinivasan (Brookhaven National Laboratory, Upton, N.Y.). In: *Hydrogen: Production and marketing; Proceedings of the Symposium, Honolulu, Hawaii, April 2-6, 1979.* Washington, D.C., American Chemical Society, 1980, p. 33-44. Research sponsored by the U.S. Department of Energy.

The state-of-the-art of hydrogen technology is reviewed with reference to hydrogen shipment, storage, hydrogen energy systems and fuel cells, applications, and economics. Attention is also given to international cooperation on hydrogen programs and research and development incentives and requirements. V.L.

A81-24071 **Free vibration of ring-sector plates of variable rigidity.** A. P. Bhattacharya (University of Zambia, Lusaka, Zambia). *Aeronautical Journal*, vol. 83, Oct. 1979, p. 399-401. 8 refs.

A mathematical analysis is given of the flexural vibration of a thin elastic plate with variable rigidity and clamped straight edges. The plate has the form of a sector of a circular ring whose circumferential edges have any combination of boundary conditions. Fundamental frequencies are determined for the specific case of a semicircular annular plate. O.C.

A81-30226 **NAECON 1980; Proceedings of the National Aerospace and Electronics Conference, Dayton, Ohio, May 20-22, 1980. Volumes 1, 2 & 3.** Conference sponsored by the Institute of Electrical and Electronics Engineers. New York, Institute of Electrical and Electronics Engineers, Inc., 1980. Vol. 1, 483 p.; vol. 2, 540 p.; vol. 3, 344 p. Price of three volumes, members, \$45.; non-members, \$60.

The volume contains papers on antenna technology, laser gyro technology, avionics for automatic target acquisition, avionics software support activities, digital flight control systems, and microcomputer technology. Other topics discussed include: communication systems, software engineering and design techniques, inertial technology, flight control systems, and advanced systems architectures. V.L.

A81-32930 # **Jet aircraft design.** D. J. Grommes and R. E. Etherington (Gates Learjet Corp., Wichita, Kan.). *American Institute of Aeronautics and Astronautics, Annual Meeting and Technical Display on Frontiers of Achievement, Long Beach, Calif., May 12-14, 1981, Paper 81-0912.* 7 p.

The purpose of this paper is to trace the process of design of a business jet aircraft from conception through development and certification. The process involves determination of market and marriage of available engines and technology. Some systems design considerations that are the results of high altitude performance requirements are discussed. The effect of the certification process and certification requirements are reviewed. Finally, some observations toward future evolution will be discussed. (Author)

A81-34185 **Integrated CAD/CAM for the 1980s.** E. N. Nilson (United Technologies Corp., Pratt and Whitney Aircraft Group, East Hartford, Conn.). *Society of Automotive Engineers, Aerospace Congress and Exposition, Los Angeles, Calif., Oct. 13-16, 1980, Paper 801170.* 8 p.

The importance of the application of an integrated interactive computing structure for CAD/CAM is now becoming widely recognized. Some major technological obstacles remain with respect to geometric modeling, data base management systems, and computer operating systems in particular. The prognosis for the solution of these problems is discussed; special attention is given to the impact of the NASA IPAD (Integrated Programs for Aerospace-vehicle Design) project, the Air Force ICAM (Integrated Computer-Aided Manufacturing) program; and the possible long-range effects of the proliferation of minicomputer-based interactive drafting and other systems are examined. (Author)

A81-34207 **The role of the turboprop in the air transportation system for the 1980's and onward.** J. J. Foody and S. C. Colwell (Fairchild Industries, Inc., Germantown, Md.). *Society of Automotive Engineers, Aerospace Congress and Exposition, Los Angeles, Calif., Oct. 13-16, 1980, Paper 801197.* 34 p. 25 refs.

The historical development of the U.S. short-haul air market in relation to equipment availability is reviewed, and projections of future developments in this market based on inherent demand factors and the introduction of new technology aircraft are discussed. It is argued that recent developments in turboprop technology, in conjunction with the abandonment of short-haul routes by the larger air carriers equipped with jet aircraft, has spurred the development of fuel-efficient turboprop engines that could spawn a new family of short-haul commercial aircraft. The likelihood and potential benefits of such a development are assessed by comparison of current and projected turboprop technology with prospective turbofan systems. Technological improvements, as measured by fuel consumed and aircraft operating costs, are compared for aircraft with up to 100 passengers at ranges of up to 850 miles. O.C.

A81-36866 **Projections of electro-optic trend correlations.** B. W. Vatz (U.S. Army, Ballistics Missile Defense Advanced Technology Center, Huntsville, Ala.) and P. D. Poulsen (Science Applications, Inc., Huntsville, Ala.). In: *Management of optics; Proceedings of the Seminar, Huntsville, Ala., October 1, 2, 1980.* Bellingham, Wash., Society of Photo-Optical Instrumentation Engineers, 1981, p. 36-41. 15 refs.

Although many are involved in the technical aspects of electrooptic signal processing, there is little concentration on its projected use and growth patterns. Few individuals have the charter to investigate the direction of this technology beyond their own areas of research. BMDATC first began preliminary studies to investigate electrooptic use in radar signal processing, and technology growth patterns, established by Project Hindsight, were used as a guideline for trend correlation and extrapolation. Adjusted tabulations, superimposed on the Project Hindsight composite histogram, revealed that it will take about ten years before a BMD electro-optic radar signal processor will be committed to pilot production. J.F.

A81-37649 # **The state-of-the-art in avionics (Überblick über die Förderung der Luftfahrt-elektronik).** H. Schak (Bundesministerium für Forschung und Technologie, Bonn, West Germany). *Bundesministerium für Forschung und Technologie, Statusseminar zur Luftfahrtforschung und Luftfahrttechnologie, 2nd, Garmisch-Partenkirchen, West Germany, Oct. 8, 9, 1980, Paper.* 17 p. 5 refs. In German.

The Federal Republic of Germany's research in avionics covers three fields: (1) the DAS Program, which is concerned with the standardization of international navigation procedures and equipment, (2) the integrated digital flight control system, whose main goals are the application of electronics to aircraft design in addition to aircraft equipment, and the reduction of fuel consumption, and (3) a program for avionics, aimed at increasing the FRG's role in electronic hardware production. The government has allotted grants to several industries for the design and manufacture of high quality aviation components, hoping to establish a long-term cooperation between aircraft and aircraft equipment producers. The number of planned components (24 total) are statistically represented, and a graph illustrates the money allotted for grants over a four year period. The aviation equipment under development is described with its grant recipients. J.F.

A81-44326 **Material and process applications - Land, sea, air, space; Proceedings of the Twenty-sixth National Symposium and Exhibition, Los Angeles, CA, April 28-30, 1981.** Symposium and Exhibition sponsored by the Society for the Advancement of Material and Process Engineering. Azusa, CA, Society for the Advancement of Material and Process Engineering (Science of Advanced Materials and Process Engineering Series. Volume 26), 1981. 891 p. \$60.

Fast curing high performance epoxy resins for filament winding applications are considered along with advanced ultrasonic testing of aerospace structures, applications of electromagnetic acoustic transducers, a new impact modified and heat resistance phenolic, a high-performance multifunctional corrosion inhibitor for aircraft, a quantitative method for photovoltaic encapsulation system optimization, applications of polymer extrusion technology to coal processing, technical applications for the personal computer, and thickness measurement methods for thin multilayer metal films. Attention is given to a multi-purpose thermoplastic polyimide, electrical characteristics of carbon/graphite fiber composites, isothermal shape rolling of titanium alloys, composite applications on Boeing commercial aircraft, the Shuttle orbiter thermal protection system, adhesive evaluation for printed wiring board bonding, the identification of nylons by pyrolysis gas chromatography, fracture and fatigue of metal-metal laminates, a comparative performance assessment of graphite and Kevlar motor cases, the challenges of manufacturing graphite-epoxy structural columns for space platforms, improved durability for weldbonded aluminum structures, maintenance and repair of advanced composite structure, composite repair concepts for depot level use, and moisture effects in epoxy adhesives. G.R.

A81-44634 * **The Space Shuttle.** M. A. Faget (NASA, Johnson Space Center, Houston, TX). In: *Space - Enhancing*

technological leadership; *Proceedings of the Twenty-seventh Annual Meeting, Boston, MA, October 20-23, 1980.* San Diego, CA, American Astronautical Society; Univelt, Inc., 1981, p. 573-592. (AAS 80-292)

The development of the Space Shuttle is traced. Aerodynamic loads and dynamic characteristics, structural design, ascent and entry heating profiles, and propulsion systems are discussed. Problems in the area of systems management and flight control during entry and in the design of an effective thermal control system are discussed in detail. (Author)

A81-46024 **Investment for the future.** I. R. Yates (British Aerospace Public, Ltd., Co., Aircraft Group, Preston, Lancs., England). *Aeronautical Journal*, vol. 85, July-Aug. 1981, p. 286-300. 5 refs.

Historical, technological assessment and program management considerations are presented in a review of aerospace investment issues. Attention is given emerging military aircraft technologies and advanced fabrication methods and materials. It is argued that a new relationship must be established between government and industry for the sake of project selection, initiation and financing mechanisms, and that greater interest must be taken by engineers in social issues arising from industrial and defence-related activities. Extensive use is made of graphic representations of late-generation technology performance trends and predictions. O.C.

A81-46351 **Inter-noise 80: Noise control for the 80's; Proceedings of the Ninth International Conference on Noise Control Engineering, Miami, FL, December 8-10, 1980. Volumes 1 & 2.** Conference sponsored by the International Institute of Noise Control Engineering. Edited by G. C. Maling, Jr. (IBM Acoustics Laboratory, Poughkeepsie, NY). Poughkeepsie, NY, Noise Control Foundation, 1980. Vol. 1, 608 p.; vol. 2, 672 p. Price of two volumes, \$49.50.

Noise sources are considered along with physical phenomena, noise control elements, vibration generation and reduction, the physical aspects of environmental noise, the effects of noise, analysis, and requirements. Attention is given to noise-generating devices, stationary noise sources, moving noise sources, specialized industrial machinery and equipment, physical mechanisms of noise generation, natural sources of noise, sound propagation in the atmosphere, enclosures for noise sources, absorptive materials, ear protective devices, noise attenuation in ducts, characteristics of vibration and shock, noise generated by vibrating surfaces and structures, propagation in structures, balancing of rotating and reciprocating machines, vibration isolation and isolators, vibration-damping materials and structures, sonic fatigue, a design to withstand intense noise loads, building noise control, community noise control, in-plant noise control, noise surveys, the perception of sound, effects of vibration and mechanical shock, community reaction to noise, instrumentation systems, measurement techniques, test facilities, signal processing, analytical methods, modeling and simulation, sampling and quality control procedures, audiometry, psychoacoustical evaluations; and testing, Federal legislation and regulations, state legislation and regulations, building codes, auditing and enforcement, and labeling. G.R.

A81-46476 **Life cycle problems and environmental technology; Proceedings of the Twenty-sixth Annual Technical Meeting, Philadelphia, PA, May 12-14, 1980.** Meeting sponsored by the Institute of Environmental Sciences. Mt. Prospect, IL, Institute of Environmental Sciences, 1980. 475 p. \$25.

The conference focuses on the following key life cycle issues: specification, design and test in environmental integration; environmental test tailoring for electronic hardware; emerging technology in environmental testing and measurement; and contamination control in industry and bioscience. Other major issues discussed are: environmental strategy and economic balance, and the growing conflict between energy demands and environmental regulation. V.L.

A81-47504 **EVC EXPO 80; Proceedings of the Third International Electric Vehicle Conference, St. Louis, MO, May 20-22, 1980.** Conference sponsored by the Electric Vehicle Council and European Electric Road Vehicle Association. Edited by L. Andrews

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(Electric Vehicle Council, Washington, DC). Washington, DC, Electric Vehicle Council, 1980. 605 p. \$75.

Issues and trends in the case of electric vehicles are considered along with vehicle systems, EV fleet user experience, batteries, aspects of vehicle testing, EV commercial market and vehicle potentials, EV cost considerations, the effective utilization of EVs, and modeling, mission analysis, and impact assessment. Attention is given to EV component reliability, automatic gearshift control for an efficient battery vehicle drive system, a brushless DC motor-power conditioner unit designed and built for propulsion of electric passenger vehicles, a roadway powered electric vehicle system, inductively coupled power systems for electric vehicles, a fuel-cell-powered golf cart, electric vehicles in telephone service, electric vehicle use in the U.S. Postal Service, high performance electric commercial vehicles, nickel iron battery design and performance, the development of the nickel-iron-battery system for electric vehicle propulsion, the advancing performance threshold of the lead-acid electric vehicle battery, advances in zinc bromine batteries for motive power, some aspects of battery vehicle evaluation with particular attention to a battery model, and a generic battery model for electric and hybrid vehicle simulation performance prediction. G.R.

A81-48326 Summer Computer Simulation Conference, Seattle, WA, August 25-27, 1980, Proceedings. Conference sponsored by AGU, AIAA, AMS, BMES, IMACS, IEEE, ISA, SCS, and S.H.A.R.E. Arlington, VA, AFIPS Press, 1980. 771 p. \$40.

Topics examined include computer hardware, software, and systems; modeling methodology; validation and verification; graphics; socioeconomic models; simulation and training; dynamic systems; management sciences; and the application of computer models in energy and resource utilization, transportation, and biological, medical, and ecological systems. Particular consideration is given to an integrated compartment method for the numerical solution of Navier-Stokes equations, an artificial intelligence approach to large-scale simulation, the evolution of real-time digital simulation of aircraft for training applications, time delays in flight simulator visual displays, and the determination of cargo container inventories through logistics simulation. B.J.

N81-10565# National Bureau of Standards, Washington, D.C. National Engineering Lab.

AN ECONOMIC MODEL FOR PASSIVE SOLAR DESIGNS IN COMMERCIAL ENVIRONMENTS

Jeanne W. Powell Jun. 1980 150 p refs Sponsored in part by DOE, Washington, D.C. (PB80-199532; NBS-BSS-125; LC-80-600081) Avail: NTIS HC A07/MF A01; Also avail: SOD CSCL 13A

The model incorporates a life cycle costing approach that focuses on the costs of purchase, installation, maintenance, repairs, replacement, and energy. It includes a detailed analysis of tax laws affecting the use of solar energy in commercial buildings. Possible methods of treating difficult to measure benefits and costs, such as effects of the passive solar design on resale value of the building and on lighting costs, rental income from the building, and the use of commercial space, are presented. The model is illustrated in two case examples of prototypical solar design for low rise commercial buildings in an urban setting. GRA

N81-10914# European Space Agency, Paris (France). **EUROPEAN ROCKET AND BALLOON PROGRAMS AND RELATED RESEARCH**

T. D. Guyenne, ed. and G. Levy, ed. Jun. 1980 555 p refs Partly in ENGLISH and FRENCH Proceedings of 5th ESA Programs and Related Res., Bournemouth, Engl., 14-18 Apr. 1980 Original contains color illustrations (ESA-SP-152) Avail: NTIS HC A22/MF A01

Topics include reviews of national programs and future plans, descriptions of research in middle atmospheric physics, balloon, rocket, and payload technology.

N81-11001# Joint Publications Research Service, Arlington, Va. **WEST EUROPE REPORT: SCIENCE AND TECHNOLOGY NO. 4**

21 Nov. 1979 105 p refs Transl. into ENGLISH from various European journals

(JPRS-74613) Avail: NTIS HC A06/MF A01

Research and development programs concerned with civil technology are addressed. Included are presentations dealing with energy technology, aerospace technology, transportation, information systems, and technology development.

N81-11264# Bendix Corp., Kansas City, Mo. **DEBURRING: TECHNICAL CAPABILITIES AND COST-EFFECTIVE APPROACHES, LESSONS 3 AND 4**

L. K. Gillespie Jun. 1980 75 p refs (Contract DE-AC04-76DP-00613) (BDX-613-2373) Avail: NTIS HC A04/MF A01

This ten lesson text on deburring is designed to provide engineers and production supervisors with an overall understanding of deburring economics and current capabilities. The material included describes economics, side effects, process selection techniques, product design influences, standards, plantwide approaches, burr formation, and prevention. Deburring methods described include barrel, centrifugal barrel, vibratory, spindle, manual, electrochemical, electropolish, brush, abrasive jet, abrasive flow, water jet, thermal energy, and mechanized mechanical. Lessons 3 and 4 describe product design influences and burr prevention and minimization respectively. DOE

N81-11562# Office of Technology Assessment, Washington, D. C.

AN ASSESSMENT OF OIL SHALE TECHNOLOGIES

Jun. 1980 522 p refs (PB80-210115; OTA-M-118; LC-80-600101) Avail: NTIS HC A22/MF A01 CSCL 10A

The means of developing the oil shale resources of the western United States is explored and the consequences of development in terms of impact on the physical and social environments is reviewed. Background information on the nature of oil shale is provided as is an evaluation of technologies for recovery of shale oil. Policy options which address barriers that could hinder the establishment of the industry are presented. GRA

N81-11690*# Georgia Univ., Athens. **COSMIC: A CATALOG OF SELECTED COMPUTER PROGRAMS**

Washington NASA [1980] 150 p Sponsored by NASA (NASA-CR-163728) Avail: NTIS HC A07/MF A01 CSCL 09B

Information is presented on various computer programs developed in the space program which are now available to the public. Many programs from the Department of Defense and selected software from other government agencies are also offered. Over 1500 programs in almost every technical or managerial discipline are available. R.C.T.

N81-12288# Bendix Corp., Kansas City, Mo. **DEBURRING: TECHNICAL CAPABILITIES AND COST-EFFECTIVE APPROACHES, LESSONS 5 AND 6**

LaRoux K. Gillespie Jun. 1980 90 p refs (Contract DE-AC04-76DP-00613) (BDX-613-2382) Avail: NTIS HC A05/MF A01

The effective plant wide reduction of deburring costs can best be achieved by considering the following factors: (1) determine the people who should be involved in a plant-wide review of deburring, (2) define the approach to be used in a plant-wide review of deburring, (3) provide some form of training for both engineers and production workers, (4) establish in-plant standards for burrs and deburring, and (5) understand the capabilities of the available deburring equipment. The key to plant wide control of deburring costs lies in considering deburring as integral as drilling or milling to the manufacturing process, in respecting the difficulty that deburring presents, in recognizing those who contribute to the success of deburring operations, and in using the large quantity of data that already exists. E.D.K.

N81-12442# Southwest Research Inst., San Antonio, Tex. **NONDESTRUCTIVE TESTING INFORMATION ANALYSIS CENTER, 1979 Annual Technical Report, 15 Feb. 1979 - 15 Feb. 1980**

Richard T. Smith Sep. 1980 31 p
(Contract DLA900-79-C-1266)

(AD-A090718: SWRI-15-5607) Avail: NTIS
HC A03/MF A01 CSCL 14/2

During the reporting period, NTIAC's computerized data file grew to 17,546 records. The NTIAC Newsletter was distributed to over 4000 recipients. Ninety inquiries (technical, bibliographic, and general) were responded to. Publications included the NTIAC Handbook and a state-of-the-art survey on Barkhausen NDE. Drafts of a critical review on magnetic leakage methods and a state-of-the-art survey on optical technologies have been prepared. Also, a critical review on accreditation and certification has been drafted, and two state-of-the-art surveys on composite materials were initiated. GRA

N81-13947# National Technical Information Service, Springfield, Va.

MICROWAVE LANDING SYSTEMS. CITATIONS FROM THE ENGINEERING INDEX DATA BASE Progress Report, 1970 - Jun. 1980

William E. Reed Sep. 1980 105 p Supersedes NTIS/PS-79/0778; NTIS/PS-78/0732
(PB80-814643: NTIS/PS-79/0778; NTIS/PS-78/0732) Avail: NTIS HC \$30.00/MF \$30.00 CSCL 17G

The bibliography cites reports from worldwide research on the planning development, and operation of microwave landing systems, including feasibility, systems engineering, equipment, signal propagation, and cost analysis. This updated bibliography contains 100 abstracts, 11 of which are new entries to the previous edition. GRA

N81-13948# National Technical Information Service, Springfield, Va.

MICROWAVE LANDING SYSTEMS. CITATIONS FROM THE NTIS DATA BASE Progress Report, 1964 - Jun. 1980

William E. Reed Sep. 1980 205 p Supersedes NTIS/PS-79/0777; NTIS/PS-78/0731
(PB80-814635: NTIS/PS-79/0777; NTIS/PS-78/0731) Avail: NTIS HC \$30.00/MF \$30.00 CSCL 17G

Federally sponsored research on the planning, development, and operation of aircraft microwave landing systems, is presented. Studies include feasibility, systems engineering, equipment, signal propagation, and cost analysis. This updated bibliography contains 181 abstracts, 35 of which are new entries to the previous edition. GRA

N81-14172# Rolls-Royce Ltd., Derby (England).

HYDROFORMING PROCESS FOR PRESSINGS

R. Boucher 1980 13 p Transl. into ENGLISH from Mekanique, (France), v. 51, Dec. 1968, p 13-15 In ENGLISH and FRENCH Presented at GAMI, 10-11 Jan. 1968
(PNR-90026) Avail: NTIS HC A02/MF A01

A new method of producing pressings using special machines known as 'hydroforms' and the process known as 'hydroforming' are described. Author

N81-16370# Army Communications Research and Development Command, Fort Monmouth, N. J. Center for Communications Systems.

THROW-AWAY RADIO (TAR) Final Report

Joseph Lee Nov. 1980 33 p
(DA Proj. 1L1-61101-A91A)

(AD-A092717: CORADCOM-80-2) Avail: NTIS
HC A03/MF A01 CSCL 17/2

Military grade components, extensive testing and modular construction are generally required for military communication equipment to provide high reliability and maintainability. The full military environment is rarely encountered in non-critical mission communications and thus a low cost, throw-away radio could be used in these missions. This report covers the investigation of a low cost, handheld transceiver concept. Representative schematics and discussions are presented and the cost for components is estimated. Although a working model was not completed, the investigation demonstrated that a low cost radio can be developed and fabricated at approximately one-fourth the cost of a similar, fully militarized unit. GRA

N81-16393# RCA Corp., Lancaster, Pa. SSD-Electro Optics and Devices.

MANUFACTURING METHODS AND TECHNOLOGY MEASURE FOR FABRICATION OF SILICON TRANSCALENT RECTIFIER Final Technical Report, 30 Jun. 1978 - 31 Mar. 1980

B. B. Adams, M. F. DeVito, and R. E. Reed Sep. 1980 142 p
(Contract DAAK70-78-C-0120)
(AD-A092078) Avail: NTIS HC A07/MF A01 CSCL 09/1

RCA has successfully completed the fabrication and testing of fifteen sample devices under this contract. This report thoroughly describes and discusses the assembly and process procedures; test circuits and test results; and configuration management procedure. It also includes numerous detailed drawings and graphs to further illustrate the ingenuity of this silicon transcalent rectifier. GRA

N81-16758* Computer Software Management and Information Center, Athens, Ga.

COSMIC: 1981 CATALOG OF COMPUTER

1981 11 p Sponsored in part by NASA Document includes a microfiche supplement

(NASA-CR-163916) Avail: Issuing Activity CSCL 09B

A catalog listing over 1600 computer programs available from the Computer Software and Management and Information Center is presented. The programs cover several fields including energy technology; chemical, mechanical, and aeronautical engineering; management; and computer technology. Abstracts, a keyword index, and a subject category index are included. In addition, for each program, information on programming languages, machine requirements, program size, and distribution media is given. M.G.

N81-17845# Hittman Associates, Inc., Columbia, Md.

PROCEEDINGS: EPA/INDUSTRY FORUM ON COAL-LIQUEFACTION

Dorothy G. Weatherby Sep. 1980 179 p Forum held at Chicago, 23-24 Oct. 1979
(Contract EPA-68-02-3147)

(PB81-113052: HIT-C1005/402-80-938; EPA-600/9-80-054; IERL-RTP-1112) Avail: NTIS HC A09/MF A01 CSCL 13B

Representatives of government and industry met with the goal of sharing information and increasing cooperation between the two groups. Synthetic fuels, standards-setting procedures, activities, and plans relating to coal liquefaction were discussed for air emissions, solid wastes, and liquid effluents. Permit procedures were summarized for coal liquefaction plants. State government participation in coal liquefaction development was discussed for Kentucky and Illinois. Industry plans in the area of coal liquefaction were presented by representatives of several firms actively involved in development and use of the technology. GRA

N81-18214* BDM Corp., Huntsville, Ala.

COAL GASIFICATION SYSTEMS ENGINEERING AND ANALYSIS. APPENDIX A: COAL GASIFICATION CATALOG Final Report

31 Dec. 1980 221 p refs 10 Vol.

(Contract NAS8-33824)

(NASA-CR-161655: BDM/H-80-800-TR-App-A) Avail: NTIS HC A10/MF A01 CSCL 21D

The scope of work in preparing the Coal Gasification Data Catalog included the following subtasks: (1) candidate system subsystem definition, (2) raw materials analysis, (3) market analysis for by-products, (4) alternate products analysis, (5) preliminary integrated facility requirements. Definition of candidate systems/subsystems includes the identity of and alternates for each process unit, raw material requirements, and the cost and design drivers for each process design. E.D.K.

N81-18215* BDM Corp., Huntsville, Ala.

COAL GASIFICATION SYSTEMS ENGINEERING AND ANALYSIS. APPENDIX B: MEDIUM Btu GAS DESIGN Final Report

31 Dec. 1980 275 p 10 Vol.

(Contract NAS8-33824)

(NASA-CR-161656: BDM/H-80-800-TR-App-B) Avail: NTIS HC A12/MF A01 CSCL 21D

A four module, 20,000 TPD, based on KT coal gasification technology was designed. The plant processes Kentucky No. 9 coal with provisions for up to five percent North Alabama coal. Medium Btu gas with heat content of 305 Btu/SCF and

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not more than 200 ppm sulfur is the primary plant product. Sulfur is recovered for scale as prilled sulfur. Ash disposal is on site. The plant is designed for zero water discharge. Trade studies provided the basis for not using boiler produced steam to drive prime movers. Thus process derived steam in excess of process requirements is superheated for power use in prime movers. Electricity from the TVA grid is used to supply the balance of the plant prime mover power requirements. A study of the effect of mine mouth coal cleaning showed that coal cleaning is not an economically preferred route. The design procedure involved defining available processes to meet the requirements of each system, technical/economic trade studies to select the preferred processes, and engineering design and flow sheet development for each module. Cost studies assumed a staggered construction schedule for the four modules beginning spring 1981 and a 90% on stream factor. E.D.K.

N81-18216* BDM Corp., Huntsville, Ala.
COAL GASIFICATION SYSTEMS ENGINEERING AND ANALYSIS. APPENDIX C: ALTERNATE PRODUCT FACILITY DESIGNS Final Report
 31 Dec. 1980 221 p refs 10 Vol.
 (Contract NAS8-33824)
 (NASA-CR-161657; BDM/H-80-800-TR-APP-C) Avail: NTIS HC A10/MF A01 CSCL 21D

The study of the production of methane, methanol, gasoline, and hydrogen by an add-on facility to a Koppers-Totzek based MBG plant is presented. Applications to a Texaco facility are inferred by evaluation of delta effects from the K-T cases. The production of methane from an add-on facility to a Lurgi based MBG plant and the co-production of methane and methanol from a Lurgi based system is studied. Studies are included of the production of methane from up to 50 percent of the MBG produced in an integrated K-T based plant and the production of methane from up to 50 percent of the MBG produced from an integrated plant in which module 1 is based on K-T technology and modules 2, 3, and 4 are based on Texaco technology. E.D.K.

N81-18219* BDM Corp., Huntsville, Ala.
COAL GASIFICATION SYSTEMS ENGINEERING AND ANALYSIS. APPENDIX F: CRITICAL TECHNOLOGY ITEMS/ISSUES Final Report
 31 Dec. 1980 48 p refs 10 Vol.
 (Contract NAS8-33824)
 (NASA-CR-161660; BDM/H-80-800-TR-APP-F) Avail: NTIS HC A17/MF A01 CSCL 21D

Critical technology items and issues are defined in which there is a need for developmental research in order to assure technical and economic success for the state of the art of coal gasification in the United States. Technology development needs for the main processing units and the supporting units are discussed. While development needs are shown for a large number of systems, the most critical areas are associated with the gasifier itself and those systems which either feed the gasifier or directly receive products from the gasifier. E.D.K.

N81-18220* BDM Corp., Huntsville, Ala.
COAL GASIFICATION SYSTEMS ENGINEERING AND ANALYSIS. APPENDIX G: COMMERCIAL DESIGN AND TECHNOLOGY EVALUATION Final Report
 31 Dec. 1980 29 p 10 Vol.
 (Contract NAS8-33824)
 (NASA-CR-161661; BDM/H-80-800-TR-APP-G) Avail: NTIS HC A03/MF A01 CSCL 21D

A technology evaluation of five coal gasifier systems (Koppers-Totzek, Texaco, Babcock and Wilcox, Lurgi and BGC/Lurgi) and procedures and criteria for evaluating competitive commercial coal gasification designs is presented. The technology evaluation is based upon the plant designs and cost estimates developed by the BDM-Mittelhauser team. E.D.K.

N81-18528# Oak Ridge National Lab., Tenn. Metals and Ceramics Div.
ECONOMIC APPLICATION, DESIGN ANALYSIS, AND MATERIAL AVAILABILITY FOR CERAMIC HEAT EXCHANGERS
 V. J. Tennergy Jan. 1981 74 p refs
 (Contract W-7405-eng-26)

(ORNL/TM-7580) Avail: NTIS HC A04/MF A01

Fuel consumption in an industrial process can be reduced by 40% or more by using recuperation or regeneration to heat air for the burners compared with use of ambient temperature air for fuel combustion with furnace gases in the range of 1300 C and air preheat temperatures above 800 C. Alloy temperature limitations and corrosion of the alloys severely limit the use of metal recuperators to preheat air above about 600 C. Structural ceramics, such as silicon carbide, offer promise for use in high-temperature HXs for recovering waste heat from hot flue gases. An assessment was made of industrial attitudes toward advanced high-temperature ceramic recuperators. Three promising industrial processes are identified where these recuperators could be applied. Conceptual designs of ceramic recuperators are given consistent with the furnace requirements for these processes. The annual national fuel saving possible for the three applications of these recuperators was estimated. DOE

N81-18550# Sandia Labs., Albuquerque, N. Mex.
PROCEEDINGS OF THE VERTICAL AXIS WIND TURBINE (VAWT) DESIGN TECHNOLOGY SEMINAR FOR INDUSTRY
 Sidney F. Johnston, ed. Aug. 1980 339 p refs
 (Contract DE-AC04-76DP-00789)
 (SAND-80-0984; CONF-8004128) Avail: NTIS HC A15/MF A01

The objective of the program is to develop technology that results in economical, industry produced, and commercially marketable wind energy systems. The purpose of the VAWT Design Technology Seminar for Industry was to provide for the exchange of the current state of the art and predictions for future VAWT technology. Emphasis was placed on technology transfer on Sandia's technical developments and on defining the available analytic and design tools. DOE

N81-18937# European Space Agency, Paris (France).
ECONOMIC EFFECTS OF SPACE AND OTHER ADVANCED TECHNOLOGIES
 T. D. Guyenne, ed. and G. Levy, ed. Sep. 1980 266 p refs
 Partly in ENGLISH and FRENCH Proceedings of ESA/Strasbourg Univ. Intern. Colloq., Strasbourg, 28-30 Apr. 1980 Prepared in cooperation with Strasbourg Univ. Sponsored by Council of Europe
 (ESA-SP-151; ISSN-0379-6566) Avail: NTIS HC A12/MF A01

The effects of innovation and the economic impact of aerospace technology and technology transfer were discussed. The papers are grouped under: methodology and problems, results and applications, and future perspectives. Questions of computer related unemployment, analysis of economic returns from research and development expenditures, and the identification of economic benefits from technology transfer are discussed.

N81-20962* National Aeronautics and Space Administration, Washington, D. C.
BEYOND THE ATMOSPHERE: EARLY YEARS OF SPACE SCIENCE
 Homer E. Newell 1980 512 p refs Original contains color illustrations
 (NASA-SP-4211) Avail: NTIS MF A01; SOD HC \$11.00 CSCL 03C

From the rocket measurements of the upper atmosphere and Sun that began in 1946, space science gradually emerged as a new field of scientific activity. The course of the United States space program is viewed in an historical context. Major emphasis is on NASA and its programs. The funding, staffing, organization, and priorities of the space program were reviewed.

N81-21619# Commerce Dept., Washington, D.C.
PHOTOVOLTAICS INDUSTRY PROFILE
 Oct. 1980 34 p
 (Contract DE-AC06-76RL-01830)
 (DOE/RL-01830/T3) Avail: NTIS HC A03/MF A01

A description of the status of the U.S. photovoltaics industry is given. Principal end user industries are identified, domestic and foreign market trends are discussed, and industry organized and U.S. government organized trade promotion events are listed.

Trade associations and trade journals are listed, and a photovoltaic product manufacturers list is included. DOE

N81-21951* National Aeronautics and Space Administration, Langley Research Center, Hampton, Va.

TECHNICAL WRITING: PAST, PRESENT AND FUTURE
J. C. Mathes, comp. (Michigan Univ., Ann Arbor) and Thomas E. Pinelli, comp. Mar. 1981 62 p refs Papers presented at the 32d Ann. Conf. on Coll. Composition and Commun., sessions A-6 and 1-11, Dallas, 26-28 Mar. 1981
(NASA-TM-81966) Avail: NTIS HC A04/MF A01 CSCL 05B

The training of technical writers and the objectives of such education are discussed. Special emphasis was placed on the communication between technical personnel and non-technical personnel. The liabilities that affect technical writers were also discussed.

N81-22064* National Aeronautics and Space Administration, Washington, D. C.

TECHNOLOGY FOR LARGE SPACE SYSTEMS: A SPECIAL BIBLIOGRAPHY WITH INDEXES, SUPPLEMENT 4

Jan. 1981 103 p
(NASA-SP-7046(04)) Avail: NTIS HC \$9.50 CSCL 22A

This bibliography lists 259 reports, articles, and other documents introduced into the NASA scientific and technical information system between July 1, 1980 and December 31, 1980. Its purpose is to provide information to the researcher, manager, and designer in technology development and mission design in the area of the Large Space Systems Technology Program. Subject matter is grouped according to systems, interactive analysis and design. Structural concepts, control systems, electronics, advanced materials, assembly concepts, propulsion, solar power satellite systems, and flight experiments.

Author

N81-22245# Union Carbide Corp., Tonawanda, N.Y.

INDUSTRIAL OXYGEN PLANTS: A TECHNOLOGY OVERVIEW FOR USERS OF COAL GASIFICATION-COMBINED-CYCLE SYSTEMS Final Report

R. F. Drnevich, E. J. Ecelbarger, and J. W. Portzer Jan. 1981 87 p Sponsored by Electric Power Research Inst. (EPRI Proj. 239-6)

(EPRI-AP-1674) Avail: NTIS HC A05/MF A01

An overview of the technology associated with commercial oxygen production is presented with focus on the technical and economic aspects that may be important in gasification combined cycle power plant applications. The manual provides an excellent summary of the following topics: history of industrial oxygen production, oxygen plant process, oxygen plant equipment, process control, plant operation and reliability, economics of oxygen production, and environmental, safety, and health considerations. A major concern of many electric utilities is the safety of oxygen plants. The manual contains a detailed discussion of how identification and control of hydrocarbon vapors in air feed has resulted in modern industrial oxygen plants that are characterized by hazard free operation. DOE

N81-22436# Shock and Vibration Information Center (Defense), Washington, D. C.

THE SHOCK AND VIBRATION DIGEST, VOLUME 13, NUMBER 3

Judith Nagle-Eshleman, ed. Mar. 1981 91 p refs
(AD-A096909) Avail: SVIC, Code 5804, Naval Research Lab., Washington, D.C. 20375; \$15.00/set CSCL 20K

The goal of the digest is to provide efficient transfer of sound, shock, and vibration technology among researchers and practicing engineers. Subjective and objective analyses of the literature are provided along with news and editorial materials. Topics include aircraft design and safety, noise reduction, acoustical impedance, and dynamic structural analysis.

N81-22519# Booz-Allen and Hamilton, Inc., Bethesda, Md.

GEOTHERMAL INDUSTRY ASSESSMENT

Jul. 1980 321 p
(Contract DE-AC03-79PE-70090)

(DOE/PE-70090/T2) Avail: NTIS HC A14/MF A01

Focus is on industry structure, corporate activities and

strategies, and detailed analysis of the technological, economic, financial, and institutional issues important to government policy formulation. The study is based principally on confidential interviews and with executives of 75 companies active in the field. DOE

N81-23101# Centre National d'Etudes Spatiales, Toulouse (France).

SYMPHONIE SYMPOSIUM, 1980

1980 983 p refs Partly in ENGLISH, FRENCH and GERMAN Symp. held at Berlin, 4-7 Feb. 1980 Prepared in cooperation with DFVLR, Cologne Original contains color illustrations
Avail: NTIS HC A99/MF A01

Numerous satellite transmission experiments were conducted, and results concerning radio, television, and data transmission as well as reception are presented. Experimental configurations are described, and equipment design specifications are given. The impact of the Symphonie utilization program on various national projects is discussed. The prospects of other telecommunications programs similar to Symphonie are also considered.

N81-23449# Joint Inst. for Lab. Astrophysics, Boulder, Colo. **RESEARCH IN LASER PROCESSES** Final Report, 1 Jul. 1975 - 15 May 1980

A. V. Phelps and A. C. Gallagher 15 Jan. 1981 177 p refs (Contract N00014-76-C-0123; ARPA Order 2683; NR Proj. 393-506)

(AD-A097563) Avail: NTIS HC A09/MF A01 CSCL 20/5

Measurements at very high rare gas densities have yielded the contribution of trimer molecules, e.g., NaXe₂, to the absorption and stimulated emission continuum of metal vapor-rare gas excimers. Attempts to obtain a sufficiently high electron and excited state temperature in a pulsed discharge in high pressure metal vapor-rare gas mixtures were unsuccessful because of the approach of the system to local thermodynamic equilibrium and the limited peak electrical energy available. A model was developed to describe the temporal growth of the cathode fall in an electron-beam initiated electric discharge. The electron drift tube technique for the measurement of electron excitation coefficients was applied to the A3 sigma and b1 sigma metastable states of N₂ and O₂, respectively, and was extended to make possible laser absorption measurements of excitation coefficients for the 3P2 metastable and 3P1 resonance states of Ne. Experimental measurements of fluorescent intensities from the resonance state of Na with white light and laser excitation, show agreement with theory when the theory is modified to include hyperfine structure and the non-radiative transport of resonance excitation. Author (GRA)

N81-24984# Public Technology, Inc., Washington, D. C.

EVALUATION OF WESTERN EUROPEAN TECHNOLOGIES IN THE FIELDS OF ENERGY AND MANAGEMENT IMPROVEMENT Final Report

May 1980 81 p

(Grant NSF ISP-77-15089)

(PB81-135170; NSF/RA-800268)

Avail: NTIS

HC A05/MF A01 CSCL 05A

The following technologies were examined in England: public lighting, nomograms; police management training simulation software; a highway maintenance data system; fuel conservation; energy sources; traffic controls and management; low energy housing; the PRESTEL television data system; performance review methods; and a waste separation plant. Technologies observed in France included geothermal district heating; cogeneration of electricity and heating; and microprocessors for vehicle tune up and peak load control. Some systems observed in Germany included a thermobile, used to make retrofit decisions for buildings to meet Federal heat loss standards; a Federal energy policy; review; new building standards; a modernization program; geoprocessing; a color printer; energy and traffic analyses; digitizing technology; and solid waste conversion. GRA

N81-25318# Patent and Trademark Office, Washington, D. C.

Office of Technology Assessment and Forecast.

PATENT PROFILES: MICROELECTRONICS, 1

Feb. 1981 262 p

(PB81-179582) Avail: NTIS HC A12/MF A01 CSCL 09E

Activity in those portions of the patent file that relate to the specific structure of integrated circuits and to systems in

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which the inventive thrust involves the use of a microelectronic information processing device such as a central processing unit is reported. For each area, the activity over a 10 year span is graphically illustrated and tables show the data relied upon for the illustrations. Assignees are listed by the number of patents held as well as alphabetically and numerically by the title of the patent. Inventors of unassigned patents from 1975 to 1979 are listed as well as their addresses. An updating technique to 1980 is also provided. A.R.H.

N81-25667* Wisconsin Univ., Madison. Biomedical Applications Team.

NASA: BIOMEDICAL APPLICATIONS TEAM Final Report, Jan. 1978 - Jan. 1981

Jan. 1981 22 p refs

(Contract NAS5-24385)

(NASA-CR-166672) Avail: NTIS HC A02/MF A01 CSCL 06B

The status of projects involving the adaptation of NASA technologies for medical purposes is reviewed. Devices for the measurement of joint deformation of arthritic hands, the development of an artificial pancreas, provision of an auditory signal to avert epileptic seizures, are described along with the control of medication levels, a compressed air tank to supply power for field dentistry, and an electroencephalogram monitor. The use of the Lixscope as a portable fluoroscope, thermal laminates for hand and foot warmers for patients with Raynaud's syndrome, and the use of absorptive coatings for instruments for controlling medication levels are described. The applicability of occupation health and safety practices to industry, computerized patient scheduling, impregnation of the common facial tissue with an agent for killing respiratory viruses, commercial applications of anthropometric data, and multispectral image analysis of the skin as a diagnostic tool are reviewed. J.D.H.

N81-25876* National Aeronautics and Space Administration, Washington, D. C.

SPINOFF 1981 Annual Report

Apr. 1981 126 p Original contains color illustrations

(NASA-TM-82366) Avail: NTIS MF A01; SOD HC CSCL 05A

Information is provided, designed to heighten awareness of the technology available for transfer and its potential for public benefit. A representative sampling of products and processes resulting from technology utilization, the secondary application of aerospace technology is presented. R.C.T.

N81-26730* National Bureau of Standards, Washington, D.C. Inst. for Computer Sciences and Technology.

COMPUTER SCIENCE AND TECHNOLOGY: INVESTIGATION OF TECHNOLOGY-BASED IMPROVEMENT OF THE ERIC SYSTEM

Siegfried Treu Jun. 1980 121 p refs Sponsored by National Inst. of Education

(PB81-167645; NBSIR-80-2005)

Avail: NTIS HC A06/MF A01 CSCL 05B

Potential technology-based improvements in the operation, access, and utilization of the Educational Resources Information Center are described. Both current problem areas and future possibilities are considered with regard to the dichotomy: system components and the total system. Emphasis is on characterizing the component functions of data input and data output as well as the total system operation in terms of applicable criteria (data type, volume, purpose, performance). Technological alternatives are then discussed with reference to those criteria. GRA

N81-26979* Claremont Graduate School, Calif.

EVALUATING THE SCIENTIFIC QUALITY OF APPROPRIATE TECHNOLOGY Final Report

David E. Drew, Kathleen McDonnell, and Patricia Raymond Oct. 1980 67 p refs

(PB81-159741; NSF/RA-800386)

Avail: NTIS HC A04/MF A01 CSCL 05A

Given differences between Appropriate Technology (AT) and conventional technology evaluation criteria which should be used to ensure that research and development in AT conform to the highest scientific standards are discussed. Traditional criteria for assessing scientific quality are analyzed. The Appropriate Technology movement and a perspective about assessment of

AT is reviewed is suggested. Specific recommendations are made with respect to proposal evaluation, funding strategies, and project assessment. GRA

N81-27191* National Academy of Sciences - National Research Council, Washington, D. C. Aeronautics and Space Engineering Board.

LIQUID ROCKET PROPULSION TECHNOLOGY: AN EVALUATION OF NASA'S PROGRAM

1981 63 p refs

(Contract NASw-3455)

(NASA-CR-164550) Avail: NTIS HC A04/MF A01 CSCL 21H

The liquid rocket propulsion technology needs to support anticipated future space vehicles were examined including any special action needs to be taken to assure that an industrial base in sustained. Propulsion system requirements of Earth-to-orbit vehicles, orbital transfer vehicles, and planetary missions were evaluated. Areas of the fundamental technology program undertaking these needs discussed include: pumps and pump drives; combustion heat transfer; nozzle aerodynamics; low gravity cryogenic fluid management; and component and system life reliability, and maintenance. The primary conclusion is that continued development of the shuttle main engine system to achieve design performance and life should be the highest priority in the rocket engine program. E.A.K.

N81-27221* National Aeronautics and Space Administration, Washington, D. C.

PROCESS FOR PURIFICATION OF SILICON

Heinz-Joerg Rath, Erhard Sirtl, and Waldemar Pfeiffer Feb. 1981 11 p refs Transl. into ENGLISH from German Patent

no. 2722783, application date 20 May 1977, 30 Nov. 1978 p 1-7 Transl. into ENGLISH by Scientific Translation Service,

Santa Barbara, Calif. Original doc. prep. by Wacker-Chemitronic Co. for Basic Electronic Materials, Inc.

(Contract NASw-3198)

(NASA-TM-76557) Avail: NTIS HC A02/MF A01 CSCL 07D

The purification of metallurgically pure silicon having a silicon content of more than 95% by weight is accomplished by leaching with an acidic solution which substantially does not attack silicon. A mechanical treatment leading to continuous particle size reduction of the granulated silicon to be purified is combined with the chemical purification step. E.D.K.

N81-27254 British Library Lending Div., Boston Spa (England). Article Translating Service.

GALVANISING TECHNIQUE

Galvan Henig Jan. 1981 13 p Transl. into ENGLISH from Galvanotechnik (West Germany), v. 69, no. 12, 1978 p 1091-1094

(BLL-RTS-11957) Avail: British Library Lending Div., Boston Spa, England

For the galvanizing in cylinders of mass produced parts made of metals or synthetic materials special instruments are required which take into account the specific, physical, electrochemical and unusual features of the parts. The operations of a cylinder are described which ensure a first rate degree of blending and, at the same time, maintain a constant contact among those parts not involved in the periodic blending phase. The parts of the synthetic material only mix themselves up during one fifth of their rotational period and are conditioned by means of the extraordinary filling quantity of the charges in relation to the volume of the cylinder; as a consequence, precise metallic points of contact are formed between these single parts which do not get involved in the blending process, and which piece through the separating electrofilm. The outcome of this largely excludes the formation of the dreaded bipolar effect. Whenever mass galvanizing is employed in the cylinder, each metallic effect and each color of metal on the parts of the synthetic material are produced in an economic, positive, and quick manner; copper, nickel, brass, silver, or gold plating can be carried out. A.R.H.

N81-27326 British Library Lending Div., Boston Spa (England). **ELECTROPHOTOGRAPHIC COLOUR PROOF-PRINTING PROCESS AND APPARATUS FOR PRINTING TECHNOLOGY**

R. H. Epping Nov. 1980 14 p Transl. into ENGLISH of

German Patent no. 2734631, 2 Aug. 1979 12 p
(BLL-RTS-12440) Avail: British Library Lending Div., Boston Spa, England

An electrographic color proof printing process is described. A photoconductor is subjected to an electrostatic charge in which the preparation of the electrostatic charge image follows in the form of an accumulation of unipolar, oppositely charged pigments of a component color on the charge image. With the use of an electrostatic field, a transference of the dye toner distribution from the photoconductor to printing paper takes place followed by fixing of corresponding dye toner distribution on the printing paper. The process stages are repeated for each of the other component colors. With half tone copies the photoconductor is subjected to an exposure of the copy and an imaging of the screen structure in one stage of the process. E.A.K.

N81-27467* National Aeronautics and Space Administration. Goddard Space Flight Center, Greenbelt, Md.

PROCEEDINGS OF THE 12TH ANNUAL PRECISE TIME AND TIME INTERVAL (PTTI) APPLICATIONS AND PLANNING MEETING

Schuyler C. Wardrip, ed. Mar. 1981 871 p refs Meeting held at Greenbelt, Md., 2-4 Dec. 1980 Sponsored in cooperation with Navy, NBS and Defense Communications Agency (NASA-CP-2175; Rept-814.2) Avail: NTIS HC A99/MF A01 CSCL 14D

The meeting gave PTTI managers, systems engineers, and program planners a transparent view of the state-of-the-art, an opportunity to express needs, a view of important future trends, and a review of relevant past accomplishments. The PTTI users were provided with new and useful applications, procedures, and techniques. Emphasis is placed on military applications and avionics.

N81-27824* Sutron Corp., Arlington, Va.
TECHNOLOGY ASSESSMENT OF FLEXIBLE DISKS AS USED IN STAND ALONE TEXT PROCESSING SYSTEMS
Final Report

W. Gene Dickamore and Ingrid K. Dampler Nov. 1980 86 p refs
(Contract NB79-SBCA-0141)

(PB81-171365; SCR-354-80-036A; NBS-GCR-80-307) Avail: NTIS HC A05/MF A01 CSCL 09B

Included are: identifying alternatives to the flexible disk cartridge for providing information interchange between stand alone word processors; defining the technical problems associated with flexible disk cartridge information interchange; surveying the Federal Government to ascertain the volume and different types of stand alone text processors currently being used and the 5 year projection of word processing equipment needed; identifying negative impacts from the establishment of a label format and file structure standard for flexible disk cartridges; and identifying all costs and benefits that would accrue to the Federal Government as a result of a label and file structure standard for flexible disk cartridges used in stand alone word processors. GRA

N81-27968* Naval Ship Research and Development Center, Bethesda, Md.

NAVY LIBRARIES' INFORMATION STORAGE AND RETRIEVAL SYSTEM. PROCEEDINGS OF THE (38TH) CONSATL WORKSHOP AND MEETING

Apr. 1981 104 p refs Conf. held 23-25 Apr. 1980
(AD-A099716) Avail: NTIS HC A06/MF A01 CSCL 05/2

Contents: User Needs for Library Automation; Overview of the Automated Library System; Outline for a Comprehensive Information Systems Analysis; Basis Battelle's Data Management System; Database Input, Circulation System, Reports System Byproduct; and Information Retrieval Features. GRA

N81-28459* Southwest Research Inst., San Antonio, Tex.
NONDESTRUCTIVE TESTING INFORMATION ANALYSIS CENTER, 1980 Annual Technical Report, 15 Feb. 1980 - 15 Feb. 1981

Richard T. Smith Watertown, Mass. Army Materials and Mechanics Research Center Jun. 1981 35 p refs

(Contract DLA900-79-C-1266)

(AD-A100147; SWRI-15-5607-2) Avail: NTIS HC A03/MF A01 CSCL 14/2

During the reporting period, NTIAC's computerized data file grew to approximately 20,000 records. The NTIAC Newsletter was distributed to over 4000 recipients. Ninety-three inquiries (technical, bibliographic, and general) were responded to. Publication were: NDE Applications of Magnetic Leakage Field Methods, and Technology Assessment of Optical Methods for Nondestructive Evaluation, Part 1 and Part 2. Two drafts on Composite NDE have been prepared. Author (GRA)

N81-29022* Iowa Univ., Iowa City. Dept. of Physics and Astronomy.

RESEARCH IN SPACE PHYSICS AT THE UNIVERSITY OF IOWA Annual Report, 1980

J. A. VanAllen Jul. 1981 56 p Sponsored by NASA (NASA-CR-164638) Avail: NTIS HC A04/MF A01 CSCL 05B

Currently active projects conducted to extend knowledge of the energetic particles and the electric, magnetic, and electromagnetic fields associated with Earth, other celestial bodies, and the interplanetary medium are summarized. These include investigations and/or instruments for Hawkeye 1; Pioneers 10 and 11; Voyagers 1 and 2; ISEE; IMP 8; Dynamics Explorer; Galileo; Spacelab and Orbital flight test missions; VLB1; and the International Solar Polar mission. Experiments and instruments proposed for the future international comet mission, the origin of plasmas in the Earth's environment mission, and the NASA active magnetospheric particle tracer experiment are mentioned. A.R.H.

N81-29065* Advisory Group for Aerospace Research and Development, Neuilly-Sur-Seine (France).

SUBSYSTEM TESTING AND FLIGHT TEST INSTRUMENTATION

Apr. 1981 320 p refs Partly in ENGLISH and FRENCH Symp. held at Geilo, Norway, 27-30 Oct. 1980

(AGARD-CP-299; ISBN-92-835-0290-6) Avail: NTIS HC A14/MF A01

Topics covered include: navigation/attack systems testing, aircraft systems testing, environmental testing, and instrumentation techniques. Special emphasis is placed on the ever increasing need for onboard systems integration.

N81-29280* Council for Scientific and Industrial Research, Pretoria (South Africa).

THE 2ND SEMINAR ON EFFICIENT METAL FORMING AND MACHINING

18 Nov. 1980 259 p refs Seminar held at Pretoria, 18 Nov. 1980

(ISBN-0-7988-2015-2) Avail: NTIS HC A12/MF A01

Methods of machining and metal forming are described with emphasis on improving efficiency in the workshop. Metal spinning, laser cutting, hot forging, and deep drawing are among the methods discussed. Improvements of material properties of machine tools by the application of wear resistant also discussed.

N81-30155 Societe Nationale Industrielle Aerospatiale, Les Mureaux (France). Space and Ballistic Systems Div.

PRESENT AND FUTURE OF THE DIRECT TELEVISION SATELLITE

Alexandre Danguet 1980 7 p Presented at INTELCOM, Rio de Janeiro, 19-23 May 1980

(SNIAS-802-422-107) Avail: NTIS HC A02

Direct-to-home television satellite broadcasting systems already in operation, and probable future systems requirements, are reviewed. Because of the diversity of needs, from large areas with uneven population density to small areas with high population density, and consequent differences in ground reception systems, designs for the future will require a higher radiated power than is provided by present day television satellites. Principal specifications for the French and German programs, including major payload specifications, antenna configurations, service modules and power generation, are given. The development of the joint French-German program to the design of a family of direct TV satellites is described. Problems of antenna design and coverage areas are considered. Author (ESA)

N81-30573* HITEK, Inc., Sweet Home, Ore.

KEITH KEESECKER OFFICE BUILDING Final Technical Report

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Charles L. Bliege 26 Jan. 1981 52 p
(Contracts DE-FC03-78CS-32144; EM-78-F-03-2144)
(DOE/CS-32144/T1) Avail: NTIS HC A04/MF A01

The solar collection system of an office building in Oregon is described. This two story office building has 4000 sq ft of space and a sq ft basement. The solar heating system has 936 sq ft of flat plate collectors and a phase change storage system. A description of the system operation, the acceptance test plan, as built wiring and piping schematics, and predicted performance data are included. DOE

N81-31018* National Aeronautics and Space Administration, Washington, D. C.

DATA BASES AND DATA BASE SYSTEMS RELATED TO NASA'S AEROSPACE PROGRAM. A BIBLIOGRAPHY WITH INDEXES

Jun. 1981 511 p
(NASA-SP-7045) Avail: NTIS HC \$35.00 CSCL 05B

This bibliography lists 1778 reports, articles, and other documents introduced into the NASA scientific and technical information system, 1975 through 1980. Author

N81-31020* Jet Propulsion Lab., California Inst. of Tech., Pasadena.

DATA BASE MANAGEMENT SYSTEMS PANEL. THIRD WORKSHOP SUMMARY

Jose L. Urena, ed. 15 Jul. 1981 39 p refs Workshop held at Greenbelt, Md., 10-12 Dec. 1980
(Contract NAS7-100)

(NASA-CR-164705; JPL-Pub-81-52) Avail: NTIS HC A03/MF A01 CSCL 05B

The discussions and results of a review by a panel of data base management system (DBMS) experts of various aspects of the use of DBMSs within NASA/Office of Space and Terrestrial Applications (OSTA) and related organizations are summarized. The topics discussed included the present status of the use of DBMS technology and of the various ongoing DBMS-related efforts within NASA. The report drafts of a study that seeks to determine the functional requirements for a generalized DBMS for the NASA/OSTA and related data bases are examined. Future problems and possibilities with the use of DBMS technology are also considered. A list of recommendations for NASA/OSTA data systems is included. A.R.H.

N81-31028# Computer Corp. of America, Cambridge, Mass.
OVERVIEW OF THE CHEMICAL SUBSTANCES INFORMATION NETWORK

R. Winter, Tomas Lozano-Perez, Donald E. Eastlake, III, and Ronni L. Rosenberg 1 Apr. 1981 19 p refs Sponsored in part by Environmental Protection Agency and National Library of Medicine
(Contract EQ8AC028)

(PB81-191009; CCA-81-03) Avail: NTIS HC A02/MF A01 CSCL 05B

The Chemical Substances Information Network (CSIN), a coordinated network of online chemical information systems, is outlined. The history of CSIN, the benefits of its use, and its technical capabilities are discussed. GRA

N81-31130* National Aeronautics and Space Administration, Langley Research Center, Hampton, Va.

HIGH REYNOLDS NUMBER RESEARCH - 1980

L. Wayne McKinney, ed. and Donald D. Baals, ed. (Joint Inst. for Advancement of Flight Sciences, Hampton, Va.) Sep. 1981 315 p refs Workshop held at Hampton, Va., 9-11 Dec. 1980
(NASA-CP-2183; L-14416) Avail: NTIS HC A14/MF A01 CSCL 01A

The fundamental aerodynamic questions for which high Reynolds number experimental capability is required were examined. Potential experiments which maximize the research returns from the use of the National Transonic Facility (NTF) were outlined. Calibration plans were reviewed and the following topics were discussed: fluid dynamics; high lift; configuration aerodynamics; aeroelasticity and unsteady aerodynamics; wind tunnel/flight correlation; space vehicles; and theoretical aerodynamics

N81-31196* National Aeronautics and Space Administration, Lewis Research Center, Cleveland, Ohio.

AIRCRAFT ENGINE DIAGNOSTICS

Jul. 1981 377 p refs Conf. held at Cleveland, 6-7 May 1981

(NASA-CP-2190; E-845) Avail: NTIS HC A17/MF A01 CSCL 21E

Engine durability and performance retention concepts are discussed. Other topics include engine diagnostics for performance retention and engine condition monitoring systems.

N81-31241# Deutsche Gesellschaft fuer Luft- und Raumfahrt, Cologne (West Germany).

SPACELAB UTILIZATION: MATERIALS RESEARCH AND PROCESSING TECHNOLOGY IN SPACE [SPACELAB-NUTZUNG: WERKSTOFFFORSCHUNG UND VERFAHRENS-TECHNIK IM WELTRAUM]

1980 351 p refs In GERMAN; In GERMAN; ENGLISH summary Presented at Status-Sem. 1980 des Bundesministerium fuer Forschung und Technologie, Wuerzburg im Ramen, West Germany, 16-18 Sep. 1980

(DGLR-80-02; ISBN-3-922010-18-0) Avail: NTIS HC A16/MF A01

The progress in the definition and design of space experiments is reviewed and an assessment of their practicability as Spacelab experiments is given. Research areas covered included: (1) physical chemistry and processing technology, with particular emphasis on hardware development and space flight compatibility; (2) metals and binding materials research, mainly dealing with boundary layer and transport phenomena at solidification fronts; (3) monocrystal growth technology, concentrating on materials analysis and development of crystallization chambers; and (4) boundary layer and transport phenomena research, with contributions on reaction kinetics and convection in crystal melts. A summary of the global German space program is also included.

N81-32076# Oak Ridge National Lab., Tenn.

PROCEEDINGS OF THE SYMPOSIUM: PERSPECTIVES ON SCIENTIFIC AND TECHNICAL INFORMATION

May 1981 161 p refs Symp. Held at Oak Ridge, Tenn., 9-10 Sep. 1980

(Contract W-7405-eng-26)

(ORNL-5749; CONF-8009152) Avail: NTIS HC A08/MF A01

Growth of the information field as an important resource to researcher is discussed, as well as a wide range of subject-related programs, facilities, and systems that are available. Topics covered included prospect and challenges, analysis patterns, transparent systems, the role of marketing, entrepreneurial opportunities, the management of data bases and federal libraries, and a review of the field from early automated efforts to futuristic possibilities. DOE

N81-32085* National Aeronautics and Space Administration, Washington, D. C.

NASA TECH BRIEFS INDEX, 1980, VOL. 5 NOS. 1-4

1980 108 p

(NASA-SP-5021(22)) Avail: NTIS HC \$11.00 CSCL 05A

Approximately 558 announcements of new technology derived from the research and development activities of NASA are presented. Emphasis is placed on information considered likely to be transferrable across industrial, regional, or disciplinary lines. Subject matter covered includes: electronic components and circuits; electronic systems; physical sciences; materials; life sciences; mechanics; machinery; fabrication technology; and mathematics and information sciences. J.M.S.

N81-32673# Oklahoma State Univ., Stillwater. Engineering Energy Lab.

SOLAR TECHNOLOGY ASSESSMENT PROJECT. VOLUME 8: WIND ENERGY

William L. Hughes, R. G. Ramakumar, and Dan D. Lingelbach Apr. 1981 143 p refs Prepared in cooperation with Univ. of Central Florida, Orlando

(DE81-029009; DOE/CS-30278/T10) Avail: NTIS HC A07/MF A01

A historical perspective of wind energy utilization, and the potential uses of wind were examined and the economic costs and technical difficulties of using it. The statistical characteristics of the wind for a moderate to high wind area in the United

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States are discussed. Information on average available energy on an annual basis is presented along with approximately monthly variations. An extensive variety of types of windmills, and a sampling of these varieties is discussed. Data on efficiencies and power coefficients for a variety of turbines are also presented. DOE

N81-33623# Florida Solar Energy Center, Cape Canaveral.
SOLAR TECHNOLOGY ASSESSMENT PROJECT.
VOLUME 1: THE STATE OF SOLAR ENERGY TECHNOLOGY

D. L. Block Apr. 1981 27 p refs
(Contract DE-FC02-79CS-30278)
(DE81-029002: DOE/CS-30278/T15) Avail: NTIS
HC A03/MF A01

The state of solar energy technology, economic considerations, problems/needs, and suggested government is assessed. Solar industry and state and local government actions are discussed. The federal government programs and the role of the federal government are emphasized. It is anticipated that the photovoltaics, passive, biomass, hot water, space heating and wind programs are all within short term of the private marketplace. DOE

N81-33641# Yale Univ., New Haven, Conn.
SOLAR TECHNOLOGY ASSESSMENT PROJECT. VOLUME 2: PASSIVE SOLAR TECHNOLOGY

Donald Watson Apr. 1981 61 p refs Prepared in cooperation with Florida Solar Energy Center, Cape Canaveral 12 Vol.
(Contract DE-FC02-79CS-30278)
(DE81-029003: DOE/CS-30278/T16-Vol-2) Avail: NTIS
HC A04/MF A01

The status of passive solar heating and cooling for residential, commercial, and agricultural applications, and of daylighting is summarized. Passive solar energy is used in the broad sense describing a comprehensive approach to design that considers all climatic impacts on a building, and includes planning on the multi-building scale. The key roles of the designer and of innovation in the building industry are discussed. Numerous terms are defined and the origins of several are discussed. Passive design principles are summarized. Performance and costs of passive solar technologies are examined. Passive energy design tools and methods are considered in the context of the overall process by which building decisions are made to achieve the integration of new techniques into conventional design. DOE

N81-33642# Colorado State Univ., Fort Collins.
SOLAR TECHNOLOGY ASSESSMENT PROJECT. VOLUME 3: ACTIVE SPACE HEATING AND HOT WATER SUPPLY WITH SOLAR ENERGY

S. Karaki and G. O. G. Loef Apr. 1981 35 p refs Prepared in cooperation with Florida Solar Energy Center, Cape Canaveral 12 Vol.
(Contract DE-FC02-79CS-30278)
(DE81-029004: DOE/CS-30278/T12-Vol-3) Avail: NTIS
HC A03/MF A01

Several types of solar water heaters are described and assessed. These include thermosiphon water heaters and pump circulation water heaters. Auxiliary water heating is briefly discussed, and new and retrofit systems are compared. Liquid-based space heating systems and solar air heaters are described and assessed, auxiliary space heating are discussed, and new and retrofit solar space heating systems are compared. The status of flat plate collectors, evacuated tube collectors, and thermal storage systems is examined. Systems improvements, reliability, durability and maintenance are discussed. The economic assessment of space and water heating systems includes a comparison of new systems costs with conventional fuels, and sales history and projections. The variety of participants in the solar industry and users of solar heat is discussed, and various incentives and barriers to solar heating are examined. Several policy implications are discussed, and specific government actions are recommended. DOE

N81-33643# Arizona State Univ., Tempe. College of Architecture.

SOLAR TECHNOLOGY ASSESSMENT PROJECT.
VOLUME 4: SOLAR AIR CONDITIONING: ACTIVE, HYBRID AND PASSIVE

John I. Yellott Apr. 1981 58 p refs Prepared in cooperation with Florida Solar Energy Center, Cape Canaveral 12 Vol.

(Contract DE-FC02-79CS-30278)
(DE81-029005: DOE/CS-30278/T5-Vol-4) Avail: NTIS
HC A04/MF A01

The status of absorption cycle solar air conditioning and the Rankine cycle solar cooling system is reviewed. Vapor jet ejector chillers, solar pond based cooling, and photovoltaic compression air conditioning are also briefly discussed. Hybrid solar cooling by direct and indirect evaporative cooling, and dehumidification by desiccation are described and discussed. Passive solar cooling by convective and radiative processes, evaporative cooling by passive processes, and cooling with roof ponds and movable insulation are reviewed. Federal and state involvement in solar cooling is discussed. DOE

N81-33644# Tennessee Univ., Knoxville. Energy, Environment and Resources Center.

SOLAR TECHNOLOGY ASSESSMENT PROJECT.
VOLUME 5: SOLAR INDUSTRIAL PROCESS HEAT

Edward Lumsdaine Apr. 1981 82 p refs Prepared in cooperation with Florida Solar Energy Center, Cape Canaveral 12 Vol.
(Contract DE-FC02-79CS-30278)
(DE81-029006: DOE/CS-30278/T7-Vol-5) Avail: NTIS
HC A05/MF A01

The Solar Industrial Process Heat (SIPH) assessment is done to candidly examine the contribution SIPH is realistically able to make in the near and long-term energy futures of the United States. The performance history of government and privately funded SIPH demonstration projects and the present status of SIPH technology are discussed. Before making final recommendations, the influence of economic and socio-political factors (which have a very large effect on the acceptability and application of any new, alternate energy technology) are considered. Focus is on evacuated tube, parabolic trough, and multiple reflector solar collectors. Auxiliary equipment which is part of a SIPH system such as pumps, blowers, controls, and heat exchangers and storage (where applicable) are also discussed. DOE

N81-33645# Arizona Univ., Phoenix.
SOLAR TECHNOLOGY ASSESSMENT PROJECT.
VOLUME 6: PHOTOVOLTAIC TECHNOLOGY ASSESSMENT

Charles E. Backus Apr. 1981 41 p refs Prepared in cooperation with Florida Solar Energy Center, Cape Canaveral 12 Vol.
(Contract DE-FC02-79CS-30278)
(DE81-029007: DOE/CS-30278/T9-Vol-6) Avail: NTIS
HC A03/MF A01

Industrial production of photovoltaic systems and volume of sales are reviewed. Low cost silicon production techniques are reviewed, including the Czochralski process, heat exchange method, edge defined film fed growth, dendritic web growth, and silicon on ceramic process. Semicrystalline silicon, amorphous silicon, and low cost poly-silicon are discussed as well as advanced materials and concentrator systems. Balance of system components beyond those needed to manufacture the solar panels are included. Nontechnical factors are assessed. The 1986 system cost goals are briefly reviewed. DOE

N81-33646# Hawaii Univ., Honolulu. Natural Energy Inst.
SOLAR TECHNOLOGY ASSESSMENT PROJECT.
VOLUME 7: A REVIEW OF OTEC

Paul C. Yuen Apr. 1981 150 p refs Prepared in cooperation with Florida Solar Energy Center, Cape Canaveral 12 Vol.
(Contract DE-FC02-79CS-30278)
(DE81-029008: DOE/CS-30278/T6-Vol-7) Avail: NTIS
HC A07/MF A01

The Ocean Thermal Energy Conversion (OTEC) principle is discussed along with general system and cycle types, specific OTEC designs, applications, and the ocean thermal resource. The historic development and present status of OTEC are reviewed. Power system components of the more technically advanced closed-cycle OTEC concept are discussed: heat exchangers, corrosion and biofouling countermeasures, working fluids, ammonia power systems, and on-platform seawater systems. Several open-cycle features are also discussed. A critical review of the ocean engineering aspects of the OTEC power system is presented. Major subsystems such as platform, cold water pipe, mooring system, dynamic positioning system and power transmission cable system are assessed for their relationships with the ocean environment and with each other. Nine available studies of OTEC costs are reviewed, and tentative comparisons are made between OTEC and traditional fuel costs. Environmen-

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tal and social effects of OTEC development and international and national laws regulating OTEC plants are reviewed. DOE

N81-33647# Houston Univ., Tex. Energy Lab.
SOLAR TECHNOLOGY ASSESSMENT PROJECT.
VOLUME 9: HELIOSTAT SYSTEMS: TECHNICAL AND ECONOMIC ASSESSMENT

A. F. Hildebrandt and C. L. Laurence Apr. 1981 92 p refs
Prepared in cooperation with Florida Solar Energy Center, Cape Canaveral 12 Vol.
(Contract DE-FC02-79CS-30278)
(DE81-029010; DOE/CS-30278/T13-Vol-9) Avail: NTIS HC A05/MF A01

An extensive review of the literature is provided on heliostat central receiver systems including subsystem design and research experiments, full scale system designs, assessments, evaluations, rankings, application and marketing studies, and heliostat manufacturing studies. The current status of heliostat system development is reviewed and assessed. Recent design reports are examined, and expected economic and performance improvements are reported. Recommendations are made for the role that government can play in heliostat systems development, and for state and federal policies for development of solar commercialization and the formation of heating utilities. DOE

N81-33648# Georgia Inst. of Tech., Atlanta.
SOLAR TECHNOLOGY ASSESSMENT PROJECT.
VOLUME 10: SOLAR TECHNOLOGY ASSESSMENT: BIOMASS

Albert P. Sheppard, Jerry L. Birchfield, and Jack M. Spurlock Apr. 1981 59 p refs Prepared in cooperation with Florida Solar Energy Center, Cape Canaveral 12 Vol.
(Contract DE-FC02-79CS-30478)
(DE81-029011; DOE/CS-30278/T11-Vol-10) Avail: NTIS HC A04/MF 01

The technical status of various biomass fuels, and needed national action and research are summarized. Fuels discussed include biomass liquid fuels from agricultural feedstocks (alcohol), liquid fuels from cellulosic feedstocks, energy from wood, and nonwoody biomass converted to gaseous fuels. DOE

N81-33649# Michigan Univ., Ann Arbor. Dept. of Mechanical Engineering and Applied Mechanics.

SOLAR TECHNOLOGY ASSESSMENT PROJECT.
VOLUME 11: THE SOLAR INDUSTRY IN THE UNITED STATES: ITS STATUS AND PROSPECTS, 1981

John A. Clark Apr. 1981 47 p refs Prepared in cooperation with Florida Solar Energy Center, Cape Canaveral 12 Vol.
(Contract DE-FC02-79CS-30278)
(DE81-029030; DOE/CS-30278/T8-Vol-11) Avail: NTIS HC A03/MF A01

The energy production goals for the solar industry, and the industry's present status are described. Manufacturing and sales of low and medium temperature solar collectors from 1974 to 2000 are analyzed, and the HUD/DOE solar demonstration programs' relative merits are discussed. Certain characteristics of the conventional water heating industry are briefly described. DOE

N81-33650# Western Sun, Portland, Oreg.

SOLAR TECHNOLOGY ASSESSMENT PROJECT.
VOLUME 12: STATE AND COMMUNITY COMMERCIALIZATION ISSUES

Ronald D. Doctor and Janice Hamrin (Alliance for Renewable Energy, Sacramento, Calif.) Apr. 1981 57 p refs Prepared in cooperation with Florida Solar Energy Center, Cape Canaveral 12 Vol.
(Contract DE-FC02-79CS-30278)
(DE81-029087; DOE/CS-30278/T14-Vol-12) Avail: NTIS HC A04/MF A01

The need to overcome economic and institutional barriers and make the transition to using renewable energy sources is briefly explained, and advantages to implementation of solar technology on the state and local government levels are discussed. The role of government involvement is defined, and the gathering and dissemination of information are discussed. Consumer protection; reliability assurance; and redress for problems. Each of these parts is discussed. Mandates, economic incentives, and subsidies are described and analyzed. DOE

N81-34087 NPM Information Services Ltd., London (England).
INFORMATION BROKING SERVICES IN USA. REPORT OF A STUDY TRIP, APRIL AND MAY 1979

Martin S. White Jul. 1980 33 p refs
(BLL-BLRDR-5624) Avail: British Library Lending Div., Boston Spa, Engl.

The characteristics of the services offered by information brokers in the USA were examined. The origins of fee based information services in the USA is traced back to the late 1960's. How these services are marketed and costed, and how to relate the experiences of US brokers to the UK information industry is discussed. Small one person operations to large companies with an excess of 60 staff are evaluated. E.A.K.

N81-34090 Leicester Univ. (England). Primary Communications Research Centre.

NEW TECHNOLOGY AND DEVELOPMENTS IN THE COMMUNICATIONS OF RESEARCH DURING THE 1980'S

A. J. Meadows 1980 43 p refs
(BLL-BLRDR-5562; ISBN-0-906083-12-5; ISSN-0144-0460)
Copyright. Avail: British Library Lending Div., Boston Spa, Engl.

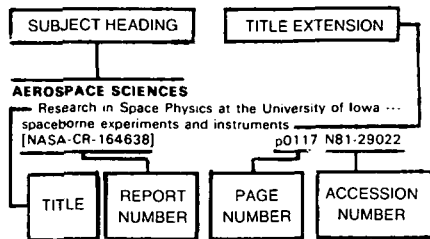
The communication of information relating to research in the United Kingdom and possible changes in such communication during the 1980s is considered. The production, dissemination, storage, and use of such information is discussed. The social and economic factors that both affect, and are affected by, the introduction of innovations is emphasized. J.D.H.

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International Air Transportation Conference, New Orleans, La., April 30-May 3, 1979, Proceedings, Volumes 1 & 2
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 Annual Reliability and Maintainability Symposium, Philadelphia, Pa., January 27-29, 1981, Proceedings
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 NAECON 1980: Proceedings of the National Aerospace and Electronics Conference, Dayton, Ohio, May 20-22, 1980, Volumes 1, 2 & 3
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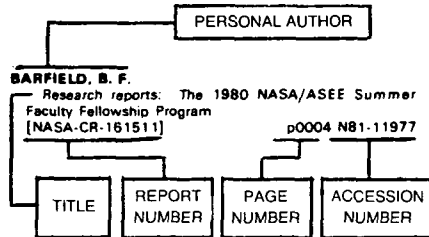
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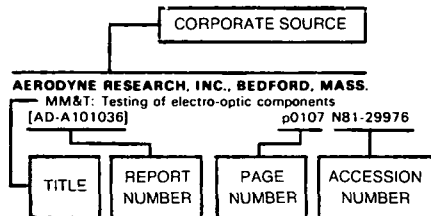
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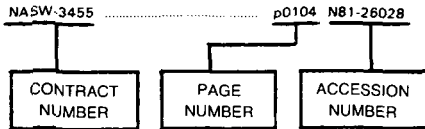
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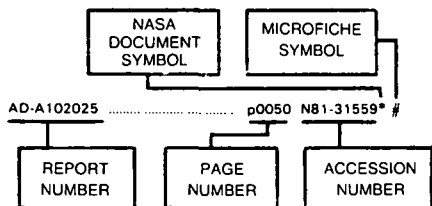
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